LBNL/PUB-3140 (Rev. 5)

Integrated Environment, Health & Safety Management Plan

Integrated Safety Management (ISM) System

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Revision 5

Ernest Orlando Lawrence Berkeley National Laboratory

"Good research needs both the GENIUS to make new discoveries and the DISCIPLINE to do it safely."

Charles V. Shank, Director
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A. INTRODUCTION - GUIDING PRINCIPLES & CORE EH&S FUNCTIONS

The Ernest Orlando Lawrence Berkeley National Laboratory (Berkeley Lab) is a multi-program national research and development laboratory managed by the University of California for the U.S. Department of Energy (DOE). Berkeley Lab is located on land belonging to the Regents of the University of California and operated primarily with funding from DOE. The Lab performs research in advanced materials, life sciences, computing sciences, energy efficiency, detectors, and accelerators to serve America's needs in technology and the environment. Berkeley Lab employs roughly 4,000 personnel, of which about 800 are students. Each year, the Laboratory also hosts more than 2,000 participating guests.

The staff and management of Berkeley Lab have been entrusted to function as stewards of this national resource. As stewards of this public trust, the staff and management must protect the public's interest and investment in the people, the land and environment, the equipment and facilities, and the intellectual property that make up Berkeley Lab. This stewardship includes a responsibility to protect the health of the public and the workers, and to maintain the confidence of Congress, the public in general, and the people who work at the Laboratory.

In light of this responsibility, Berkeley Lab commits itself to perform all work safely, in a manner that strives for the highest degree of protection for employees, participating guests, visitors, the public, and the environment, commensurate with the nature and scale of the work. In the context of this plan, safety refers to all environment, safety, and health (ES&H) considerations. In addition, Berkeley Lab seeks continuous improvement to sustain excellence in the quality of all EH&S programs. To achieve these goals, Berkeley Lab has adopted the following principles, which are reflected in the Laboratory's detailed policies and procedures. Principal investigators (PIs), managers, and supervisors are expected to incorporate these principles into the management of their work activities. While these principles apply to all work, the exact implementation of these principles is flexible and can be tailored to the complexity of the work and the severity of the hazards and of the environmental impacts.

1. Line Management Responsibility for ES&H. Line management is responsible for the protection of the public, the workers, and the environment. More specifically, Berkeley Lab line managers are responsible for integrating ES&H into work and for ensuring active communication up and down the management line and with the workforce.

2. Clear Roles and Responsibilities. Clear and unambiguous lines of authority for ensuring ES&H roles and responsibilities are established and maintained at all organizational levels within Berkeley Lab, and for work performed by its contractors. At Berkeley Lab, this principle is manifested in contract language, position descriptions, employee performamce reviews, work authorization documents, and other agreements, most notably the UC Berkeley/LBNL Partnership Agreement on ES&H.

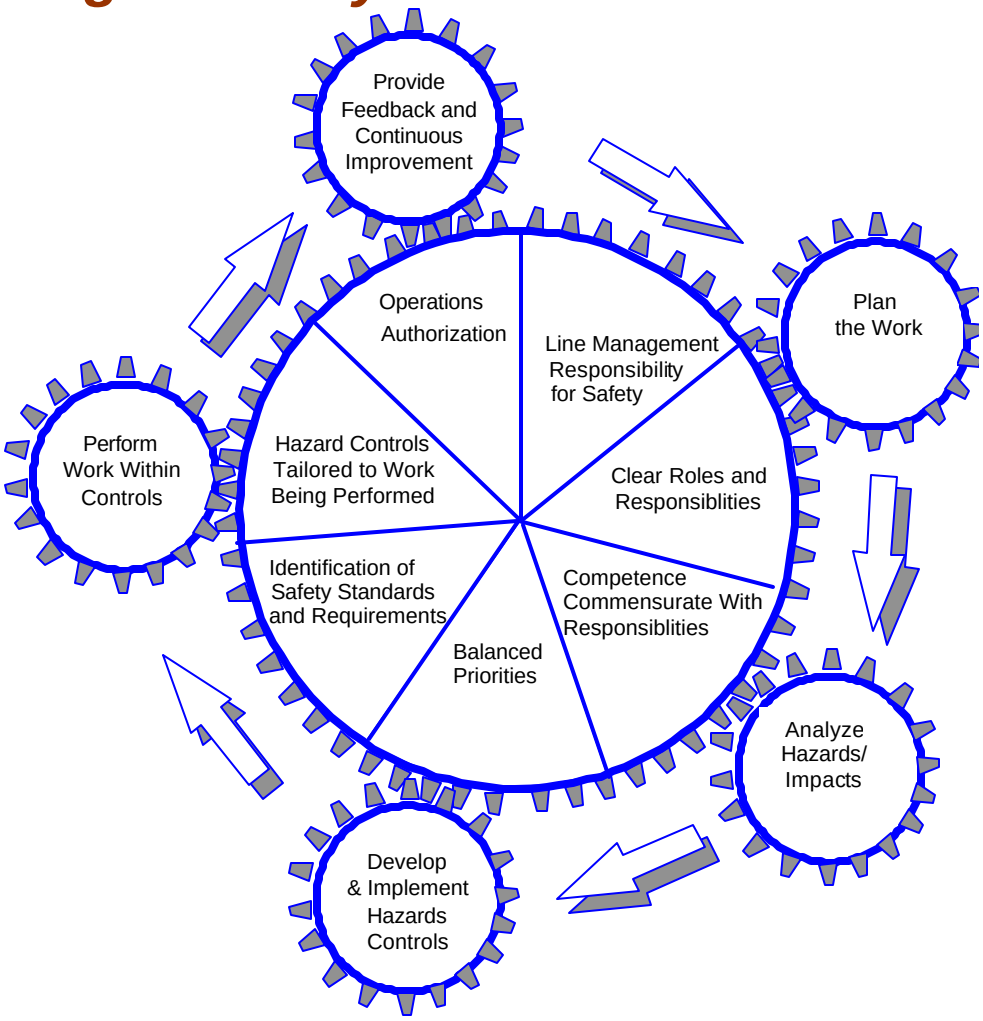
3. Competence Commensurate with Responsibilities. Personnel possess the experience, knowledge, skills, and abilities necessary to discharge their responsibilities. Berkeley Lab management takes steps to ensure that the appropriate depth and breadth of technical talent in ES&H is available and

that the Laboratory has in place the means for periodically evaluating competencies. Competence includes training, experience, and fitness for duty.

4. Balanced Priorities. Resources are effectively allocated to address EH&S, programmatic, and operational considerations. Protecting the public, workers, and the environment is a priority whenever activities are planned and performed.

5. Identification of EH&S Standards and Requirements. Before work is performed, the associated hazards are evaluated and an agreed-upon set of standards and requirements is established. These standards, if properly implemented, provide adequate assurance that the public, workers, and the environment are protected from adverse consequences. At Berkeley Lab this is accomplished through a periodic review and approval process called the Work Smart Standards (WSS) protocol (see Appendix D). Results of Self-Assessment rollups, planned EH&S Division reviews, and other independent or external audits will be considered during this review. The appropriateness of the current standards set will be reviewed and updated as needed, at least annually.

The Integrated Safety Management System



6. Controls Tailored to Work Being Performed. Operational, engineering, and administrative controls to prevent and mitigate hazards and environmental impacts are tailored to the work, the environment in which the work is performed, and the hazards or environmental impacts associated with the work. Berkeley Lab recognizes that tailoring requires judgment to be exercised at the appropriate decision level.

7. Operations Authorization. By using the WSS process, an agreed-upon set of standards, which establishes the conditions and requirements that must be satisfied for working at the Laboratory, is developed. In addition, certain activities that involve wastewater or storm water discharges, air emissions, hazardous material storage in underground tanks and hazardous waste storage and treatment require external authorizations or permits from regulatory agencies. These activities and requirements are described in Chapters 11 and 20 of the LBNL Health and Safety Manual (PUB-3000). Internal authorizations may also be required and these are described in Chapter 6 of

LBNL/PUB-3000. Examples of internal authorizations include Radiation Work Authorizations (RWAs) and Activity Hazard Documents (AHDs), Safety Analysis Documents (SAD) for the Hazardous Waste Handling Facility (HWHF), and BioSafety Program Registrations. Another form of authorization that exists for Berkeley Lab is the site-wide Environmental Impact Report (EIR). Berkeley Lab conducts an environmental review during each renewal of the five-year DOE/UC contract.

These guiding principles are implemented through the following core EH&S functions, which must become a part of every aspect of work at Berkeley Lab:

1. Work Planning. Clear definition of the tasks to be accomplished as part of any given activity.

2. Hazard and Impact Analysis. Identification and analysis of the hazards, risks, and environmental impacts associated with any activity.

3. Establishment of Controls. Controls sufficient to reduce the hazards and impacts associated with any activity to acceptable levels. Acceptable levels are determined by responsible line management, but are always in conformance with all applicable laws as established by the WSS process.

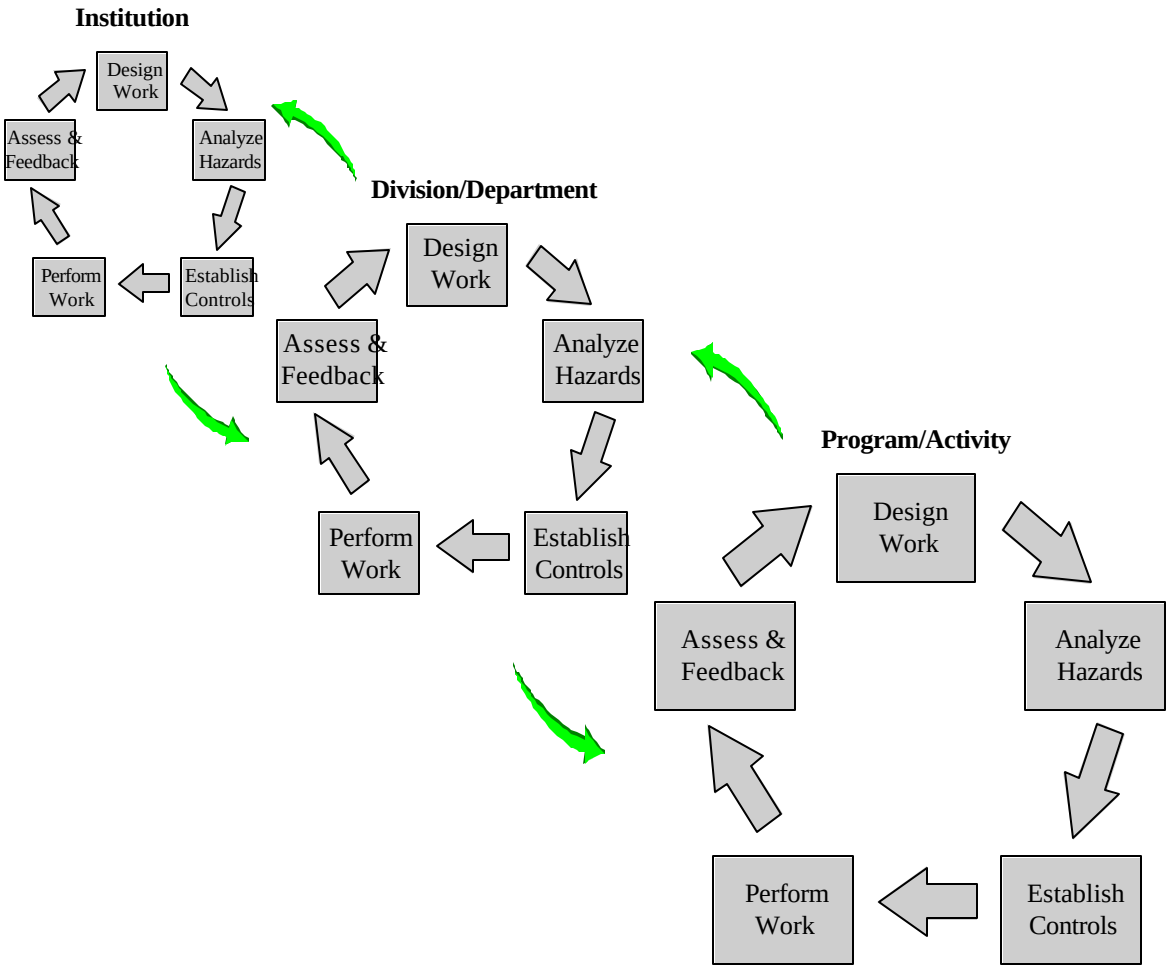
4. Work Performance. Work activities are conducted in accordance with the established controls.

5. Feedback and Improvement. Implementation of a continuous-improvement cycle for the activity, including incorporation of corrective actions, employee suggestions, lessons learned, and employee and community outreach, as appropriate.

These core EH&S functions apply at all levels of the Laboratory: at the institutional level, at the division or department level, and at the level of individual projects or work activities. This Plan describes how these core functions are addressed at these three levels at Berkeley Lab (see Appendix B), and how activities involving Berkeley Lab contractors are managed for EH&S concerns.

The guiding principles and the core EH&S functions are closely related. Each level of organization at Berkeley Lab will be assessed by determining (1) how each core EH&S function is being performed at every level, and (2) how well each core EH&S function reflects the guiding principles. The self-assessment criteria, which are published each year, will be written to evaluate progress and successful implementation of the Integrated Safety Management System (ISMS).

Levels of Work Management



B. CORE EH&S FUNCTIONS AT THE INSTITUTIONAL LEVEL

At the institutional level, the core EH&S functions are addressed through Laboratory-wide policies and procedures. The most significant publications in this context are:

LBNL/PUB-201, the Regulations & Procedures Manual (RPM);

http://www.lbl.gov/Workplace/RPM/

LBNL/PUB-3000, the Health & Safety Manual;

http://www.lbl.gov/ehs/pub3000

LBNL/PUB-3111, the Operating and Assurance Plan (OAP);

http://www.lbl.gov/ehs/oap/oap_home.htm

LBNL/PUB-3180, Environmental Management System Plan;

http://www.lbl.gov/ehs/esg/emsplan/emsplan.htm

LBNL/PUB-5344, the Environment, Safety & Health Self-Assessment Program;

http://www.lbl.gov/ehs/oap/html/performance.htm#Self

LBNL Work Smart Standards (WSS) Set;

http://labs.ucop.edu/internet/comix/contract/LBNL/wss-lbnl.pdf

DOE Order 450.1, Environmental Protection Program, established a requirement that an Environmental Management System (EMS) be implemented at all of its facilities. LBNL has developed a performance-based EMS — a systematic approach to ensuring that environmental stewardship activities are not only well managed but also provide business value. The performance-based approach will allow the Laboratory to focus resources on those activities that have the greatest environmental benefit while maintaining and building on the strengths of the current environmental compliance programs. In addition, DOE Order 450.1 mandated that the EMS be integrated with existing Integrated Safety Management (ISM) systems. Under ISM, the term "safety" also encompasses health and environment. Therefore, the guiding principles and core functions in ISM are as applicable to the protection and stewardship of the environment and protection of employee health as they are to safety.

The Operating and Assurance Plan (OAP) and the Self- Assessment programs are themselves ES&H integrating mechanisms. They ensure line management knowledge and accountability at all levels of the organization. The OAP (see Appendix C) provides broad guidance for work planning of new initiatives, and the Self-Assessment Program provides assurance for the safe operation of new and continuing operations and feedback for their improvement.

1. Work Planning

The mission of Berkeley Lab as negotiated with DOE determines the work of the Laboratory. In general, each of the scientific divisions at the Laboratory has established a set of core competencies that roughly defines the kind of work performed by that division. These core competencies evolve according to needs and changes in the underlying science, and they are updated annually through the Berkeley Lab Institutional Plan. Each of the operations divisions has a set of responsibilities that likewise define the programs and processes that take place or are contracted for. Operationally, the overall nature of physical activities and the associated hazards and impacts are fairly stable and do not change significantly from year to year.

Site-wide future work planning for institutional issues is addressed through the Annual Prioritization and Funding Process for GPP and Non-Cap Projects and GPE Equipment. Each year, all research and support divisions are asked to identify and submit their project and equipment requirements for the next several years and to justify their requests. Included in the budget call process are requests for activities necessary to ensure the health and safety of employees and the public, and the protection of the environment. It includes a data management system that contains information regarding all outstanding environment, safety, and health needs.

This process provides the following:

- Provides programmatic and infrastructure organizations with the opportunity to examine operational needs and submit prioritized candidate project proposals in the budget process.
- Serves as a vehicle for implementation of the Laboratory goals expressed in the Institutional Plan, Ten-Year Site Plan, and related documents.
- Facilitates Lab-wide coordination of divisional/departmental project proposal reviews and Laboratory infrastructure improvement and expansion project proposals.

The Project Coordinating Committee (PCC) provides the institutional review and prioritization of projects involving: Non-Capital Alterations (NCA), Line Item Projects (LIP), and General Plant Projects (GPP) requests and is comprised of the following members:

- Facilities Division Deputy
- Information and Technical Services Division Deputy
- EH&S Division Deputy
- Engineering Division Deputy
- Facilities Department Project Planning Lead (staff to the committee)
- Office of the Chief Financial Officer (staff to the committee)
- Strategic Planning and Development Director
- Selected Research Division Deputies, one of whom will chair the committee.

The General Purpose Equipment (GPE) Committee provides institutional review and prioritization of GPE requests and is comprised of the following members:

- Facilities Division Director (Chair)
- EH&S Division Director

- Engineering Division Director
- Facilities Department Project Planning Lead (staff to the committee)
- Office of the Chief Financial Officer Budget Officer (staff to the committee)
- Information and Technical Services Division Director

The Associate Laboratory Directors review requests referred through the Annual Prioritization and Funding Process for GPP and Non-Cap Projects and GPE Equipment, confirms that they are consistent with institutional priorities, and finalizes funding recommendations for NCA, GPE, and GPP projects. The Director's Action Committee (DAC) provides funding guidance and mission guidance.

In response to the budget call, all Laboratory divisions submit a prioritized list of candidates for project and equipment funds. Candidate items with potential ES&H impact are referred to the EH&S Division for review. Each request is completely scoped and then evaluated using two prioritization criteria: the Capital Asset Management Process (CAMP) and the Risk-Based Priority Matrix (RPM) rating system. All candidate items are then reviewed by the Project Coordinating Committee, and recommendations are prepared for LBNL senior management. LBNL senior management adjusts the priorities, if needed, and then presents these recommendations to the Directors Action Committee for final approval (see Appendix A).

The list also includes a "below-the-line" listing of prioritized items for which funds are not currently available. When additional funds become available, the highest ranked "below-the-line" projects are moved up and completed. The Deputy Director for Operations also reviews this list periodically throughout the year to determine appropriate mid-course corrections.

There are two institutional programs that are directly funded by DOE and implemented by the EH&S Division:

1. The Environmental Restoration Program (ERP) and
2. The Safeguards and Security Program.

The activities of the ERP are directly funded by DOE through its Office of Environmental Management (EM). ERP activities are based primarily on agreements reached with the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC) regarding sites with non-radioactive contaminants and with DOE for sites with radioactive contaminants. DTSC's cleanup requirements follow the RCRA Corrective Action Program regulations and are a condition of LBNL's Hazardous Waste permit. DOE requirements are based on their directives, primarily DOE Order 5400.5, "Radiation Protection of the Public and the Environment." ERP activities are also guided by EM initiatives to accelerate site restoration activities and to reduce the costs of DOE's restoration activities. DOE can make additional funding available when necessary, especially in situations where interim corrective measures can be implemented ahead of schedule to more effectively address contamination.

ERP performance is measured by performance-based metrics in the contract with DOE.

The work of the entire Berkeley Lab (at the levels of divisions/departments, projects, and benchtop) was reviewed and catalogued from an EH&S perspective in 1996 through the Integrated Hazard Assessment (IHA), as part of the WSS process. The Hazard, Equipment, Authorization, and Review (HEAR) database has superseded the IHA. The WSS process is conducted annually (see Section 3, Establishment of Controls).

The Radiation Safety Program implements DOE radiation protection regulations which are enforced via the Price-Anderson Amendments Act (PAAA). The program is implemented by a DOE-approved Radiation Protection Program document (RPP). The radiation safety program is overseen by an institutional committee, appointed by the Laboratory Director and the Radiation Safety Committee (RSC). The RSC authorizes all use of radiation at Berkeley Lab. The RSC Charter is found in Appendix M.

2. Hazard and Impact Analysis

A comprehensive hazard analysis was included as part of the 1996 IHA effort for Berkeley Lab. Each work activity identified was evaluated for hazards, and each hazard found was determined to represent either a low, medium, or high level of concern. The determination considered both the underlying risk and the probability of occurrence in light of the quality of controls present. The IHA was actually performed at the division/department level; the institutional assessment is merely a roll-up. Divisions and departments also update this process (see below) and are rolled up for Berkeley Lab as a whole. Continuous improvement is expected in the depth and breadth of hazard and risk assessments.

The underlying processes associated with the hazard- and impact-analysis element of ISM have matured. The IHA database has been superseded by the Hazards, Equipment, and Authorization Review (HEAR) system. This Web-based tool allows division users direct access to information relevant to the identification and evaluation of hazards associated with their operations. The emphasis is on division-user maintenance and use of the data.

In addition, a comprehensive environmental impact analysis is performed each year by an EMS Core Team that had been formed to implement the EMS program at LBNL. The Core Team can draw from expertise across the Laboratory, but it is currently composed of representatives from the Environment, Health, and Safety (EH&S), Facilities, and Procurement organizations. The impact analysis includes an identification of environmental aspects (activities or services that may produce a change in the environment) resulting from LBNL operations within the broad categories of waste generation, emission, and discharges to the environment, materials/resources use, and land/building development and use. The impacts associated with each aspect are identified, and each aspect is then ranked according to the significance of its impacts. The activities with the most significant impacts are selected, and goals, objectives, and targets are developed for reducing their environmental impacts.

The HEAR system, in conjunction with the EMS environmental impact analysis system, constitutes the framework for institutional hazard and impact analysis.

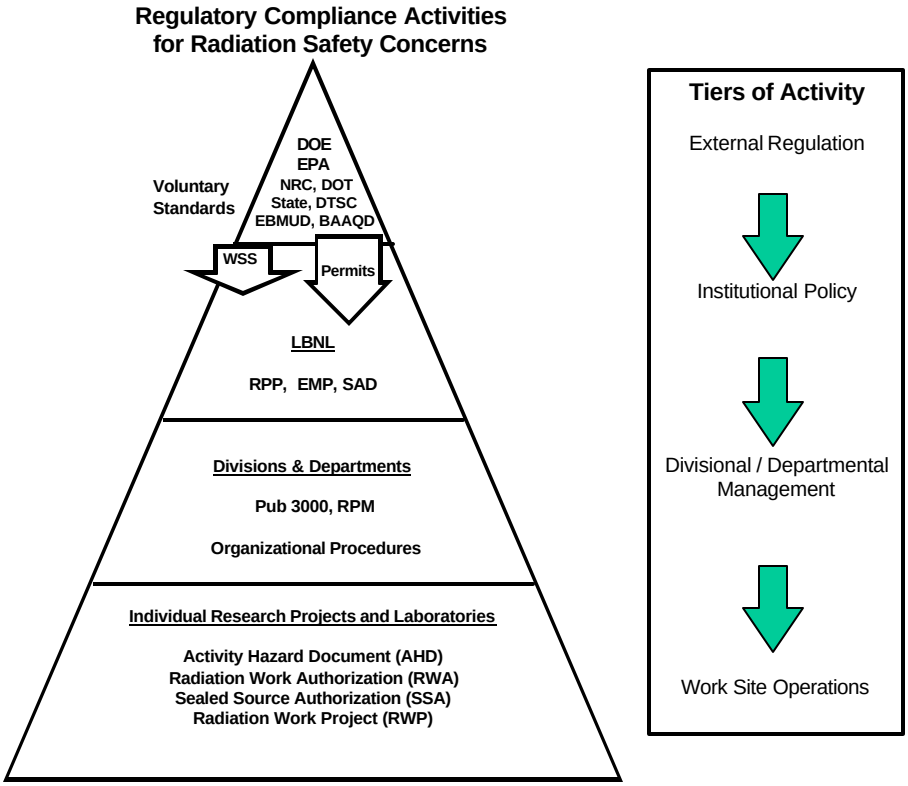
Chapter 6 provides the basis for internal work authorizations (AHAs, RWAs, RWPs, SSAs, etc.). These authorizations implicitly embed the concept of high and medium levels of concern associated with facilities and spaces into the HEAR system.

3. Establishment of Controls

The most fundamental control on the work carried out by Berkeley Lab is established within the contract between the Regents of the University of California and the U. S. Department of Energy. This contract is the underlying work authorization for Berkeley Lab, and it enumerates the conditions under which Berkeley Lab must operate through management orders and negotiated Work Smart Standards (WSS). Berkeley Lab also has a current EIR with an addendum provided as part of the latest contract revision, and there are external operating permits and internal Safety Analysis Documents (SADs) for many facilities and activities. As part of the long-range planning process, Berkeley Lab is also reviewing the appropriateness of creating SADs.

The 1996 IHA provided the basis for the Berkeley Lab WSS set, which was incorporated into the UC/DOE contract in November 1996. These standards are now in effect, and they define the controls that must be implemented at Berkeley Lab. Because of the dynamic nature of the Berkeley Lab's research activities and the changes that may occur in the regulatory environment, Berkeley Lab has adopted a formal two-pronged process for updating and maintaining the WSS (see Appendix D). As the work changes at the division/department level, the changes are analyzed to determine if additional standards need to be identified, and this information is rolled up to the institutional level (see below). EH&S division technical staff have been identified and charged with monitoring regulatory requirements to ensure that significant revisions are incorporated into the WSS set. Proposed changes to the WSS set will be rolled up annually. They will then be discussed at one of the quarterly Operational Awareness (OA) meetings with DOE counterparts prior to proposal for formal adoption. Responsibility for formal notification of the DOE Contracting Officer rests with the LBNL Manager, Office of Institutional Programs (Contracting Officer). If errors are discovered with the WSS set during its implementation, the EH&S Division technical staff will form an internal review team to evaluate and correct any inaccurate information, prepare a memo to file, and provide notification to BSO and the LBNL Contracting Officer.

The WSS set provides the basis for the policies and procedures contained in Berkeley Lab's EH&S guidance documents, principally LBNL/PUB-3000 and subordinate documentation. Berkeley Lab has revised LBNL/PUB-3000 to accurately reflect the requirements of the WSS set.
The manner in which the WSS set flows down and interacts with other requirements is illustrated in the following chart, using radiation safety concerns as an example.



4. Work Performance

The work performed at the institutional level is to guide and promote the mission of Berkeley Lab. The Berkeley Lab Director sets the broad vision for Berkeley Lab, based on the policies of the Regents of the University of California and of the U. S. Department of Energy as expressed in the prime contract. For the institutional staff, the actual work consists of developing guidance for the divisions and departments, and implementing institutional decision-making processes needed to implement the mission. (Actual work is performed at the project or activity level, and work performance is discussed under Section D, Core EH&S Functions at the project or activity level.)

As far as ES&H issues are concerned, the guidance is developed by Berkeley Lab staff functions [EH&S Division, Office of Assessment and Assurance (OAA), and National Environmental Protection Act–California Environmental Quality Act (NEPA-CEQA) Office] and is contained in the RPM (LBNL/PUB-201), in LBNL/PUB-3000, and in the OAP. Responsibility for developing this guidance has been assigned to the EH&S Division Director and to the NEPA-CEQA coordinator.

Decision-making responsibility and authority for ES&H issues is clearly defined in Chapter 1 of LBNL/PUB-3000 (see Appendix E). Most decisions are not of an institutional nature, but rather occur at the project or activity level and are discussed below.

Decision making for institutional ES&H issues has been delegated to the EH&S Division Director and is exercised in consultation with the Berkeley Lab Director's Action Committee (DAC). Institutional issues

addressed include the contents of LBNL/PUB-3000, other Berkeley Lab EH&S policies, and negotiation of performance measures with UC and the Department of Energy.

In many cases, environmental impacts are addressed at an institutional level. The EMS Core Team addresses those activities that have significant environmental impacts by establishing goals, objectives, and targets for reducing their impacts. Environmental Management Programs (EMP) are developed that formally establish the appropriate set of actions, identify resource needs and metrics, and set up schedules. Each EMP may have multiple tasks or actions, and each task will employ specified procedures or techniques that will be developed, implemented, or used in order to achieve the objective and target.

For work carried out in LBNL and University of California at Berkeley (UCB) spaces, a "Partnership Agreement" has been renewed that clarifies responsibilities and oversight of safety requirements. Although the UCB campus and Berkeley Lab safety systems and procedures differ, they are consistent with the principles of integrated safety management and provide equivalent protection (See Appendix G).

The UCB safety system governs Berkeley Lab operations in campus spaces exclusive of the Donner and Calvin laboratory facilities. Lab principal investigators (PIs) have an obligation to Berkeley Lab line management to provide a safe workplace on campus for all Lab-sponsored work by complying with the UCB safety system. Berkeley Lab safety system governs work in LBNL spaces, which include Donner and Calvin Laboratories.

Also important in determining the quality of work performance are budgeting and prioritization of institutional projects that may have an ES&H impact. These issues were more completely discussed earlier in Section B-1, Work Planning.

5. Feedback and Improvement

The institution is under close scrutiny and review by internal and external organizations and agencies. Institutional ES&H issues are reviewed by numerous external entities, including the regulatory agencies, public officials, and local community members. Some of the external agencies with the more significant oversight roles include:

- DOE – Office of Science (SC)
- DOE – Environmental Management (EM)
- DOE – Environment and Health (EH)
- DOE – Berkeley Site Office (BSO)
- University of California President's Council
- University of California Office of the President Laboratory Administration Office (UCOP/LAO) (Appendix F appraisals)
- California Air Resources Board (CARB)
- City of Berkeley
- California Department of Toxic Substances Control (DTSC)

- Bay Area Air Quality Management District (BAAQMD)
- Central Contra Costa Sanitary District (CCCSD)
- East Bay Municipal Utility District (EBMUD)
- US Environmental Protection Agency, Region 9
- San Francisco Bay Regional Water Quality Control Board
- California Water Resources Control Board

The interaction with DOE-OAK/BSO is based on operational awareness and oversight to assure appropriate stewardship and compliance with the requirements of the UC-DOE contract (see Appendix F). These activities are in part designed to help provide feedback to Berkeley Lab concerning ES&H performance for the purpose of continuous improvement. Many of the agencies also oversee more specific ES&H issues at the division/department and project/activity levels. The combined set of reviews by these agencies constitutes the external feedback on the adequacy of EH&S programs.

The major internal functions that provide feedback and information for continuous improvement include:

- DOE reviews and audits
- Regulatory agency inspections
- Appendix F Self-Assessments
- Berkeley Lab Community Relations Department (http://www.lbl.gov/Community/)
- OAA reviews of ES&H systems
- EH&S Division Peer Review
- Division Self-Assessments
- Management Assessments
- Independent Assessments
- EH&S Integrated Functional Appraisals (IFA)
- Safety Review Committee (SRC) Management of Environment, Safety, and Health (MESH) Reviews
- Berkeley Lab/DOE Operational Awareness
- Triennial RPP Internal Audit
- Annual RSC Report to the Laboratory Director
- Certified or Validated Systems (e.g., DOELAP, EMS, OHSAS 18001, AAAHC, AALAC, etc.)

Of particular note here are the Appendix F self-assessments and the ES&H IFA. Several ES&H performance measures have been incorporated into the prime contract for Berkeley Lab; performance in these areas is continually tracked, publicized internally, and reviewed annually by the UC Office of the President (UCOP) and DOE. Specific individuals have been identified for each performance measure; they are responsible for ensuring that upgrades to institutional efforts are proposed and implemented to obtain the best possible performance under these measures. Clear lines of responsibility thus have been established to assure feedback and improvement or sustained excellence for ES&H efforts at the institutional level.

While the ES&H IFAs are carried out at the division or project level, they are also used to identify and address new hazards and corresponding needs for new standards to be incorporated into the WSS set. A mechanism for incorporating these changes at the institutional level has been developed.

In addition, the EMS program will be audited annually by the Lab's Office of Assessment and Assurance (OAA) and triennially by a third party to determine if all programmatic activities were completed and an acceptable level of effectiveness was achieved. The Laboratory's executive management will also annually review progress towards achieving EMS objectives and targets, and results of EMS internal and external reviews. If any of these reviews identify negative findings, corrective actions will be implemented.

Feedback on environmental activities is also summarized and reported annually in Site Environmental Reports (SER) and the Radiological Air Emissions Report. These reports provide information regarding environmental performance and monitoring activities for each calendar year. In general, these reports:

- demonstrate that Laboratory activities operate within regulatory and DOE requirements;
- provide a historical record of any Laboratory impacts on the environment;
- support environmental management decisions; and
- provide data on the effectiveness of emission control programs.

Included in each SER are summaries of operating permits, audits and inspections, DOE-reportable incidents, and all environmental compliance programs at Berkeley Lab. Most of the report is dedicated to summarizing and discussing the results from the monitoring of emissions and the local environs (stack air, ambient air, surface water, wastewater, groundwater, soil, sediment, vegetation, foodstuffs, and penetrating radiation). The radiological impacts to the public and the local environment from Berkeley Lab operations are also discussed and compared to regulatory limits. Copies are provided to key Laboratory staff, regulatory agency representatives, DOE and other DOE organizations, and community representatives. The SERs are also posted on the Web at: http://www.lbl.gov/ehs/epg/html/env_protection.htm.

The renewed UCB and LBNL ES&H Partnership Agreement also incorporates a feedback and improvement mechanism for LBNL work performed at UC Berkeley. Annually UCB will validate that the PIs on campus (Appendix I space) who are working on Berkeley Lab-sponsored work have met the UCB safety system requirements. Results of the validation feed into the Berkeley Lab's Self-Assessment Program and annual report.

Aside from external and internal institutional assessments, institutional issues are raised during various assessments of individual activities or select divisions, giving opportunity to improve various aspects of the institutional program. An annual institutional summary of the divisions' self-assessment efforts is prepared for and reviewed by the Berkeley Lab Director. This summary provides additional insight into the strengths and weaknesses of institutional programs. This has been and will continue to be used to improve the institutional ES&H programs. Finally, the adequacy of Berkeley Lab ES&H management systems is reviewed periodically by Berkeley Lab senior management for suitability, adequacy, and effectiveness. Mechanisms for conducting this review include independent peer reviews and the annual roll-up of contract performance measures.

Berkeley Lab also maintains a Lessons Learned program, designed to ensure that applicable lessons learned in any part of the Laboratory or at other facilities are efficiently brought to the attention of divisions and individuals who may benefit from this information. The lessons-learned Web site is http://www.lbl.gov/ehs/html/lessons_learned.htm.

This Berkeley Lab ISM plan undergoes an annual internal review, coordinated by the EH&S Division, to ensure that its ISM description is current, valid, and appropriately reflecting the system's implementation procedures and practices. Any changes are discussed, reviewed, and approved jointly between the Berkeley Lab EH&S Division Director and the DOE BSO Manager prior to formal incorporation into the plan. A negotiated group of Appendix B Performance Measures, encompassing a set of ISM leading indicators, will be used to gauge Berkeley Lab progress toward systematically integrating ES&H into management and work practices at all levels of the organization and activities. Meeting this performance objective will demonstrate accomplishment of mission while protecting workers, the public, and the environment (see Appendix N).

A variety of formal communication methods have been established at Berkeley Lab which enable employees and the community to report environmental, health, and safety concerns, in addition to suspected fraud, waste, or abuse issues. Employees or former employees may file a concern with their immediate supervisor, higher-level managers, division safety coordinator, or EH&S Liaison; Internal Audit Services and Assessments (IASA); or the Department of Energy. Concerns may be submitted in confidence, either verbally, electronically, or telephonically. Persons reporting hazards or improper activities are fully protected by the law and Lab policy against retaliation.

The available reporting mechanisms include:

LBNL Safety Concerns Web Page	http://www.lbl.gov/ehs/refs/safety_concern.shtml
LBNL Internal Whistleblower Hotline (24-hr. voicemail)	1-510-486-6300
U.S. DOE Employee Concerns Hotline (24-hr. voicemail)	1-510-637-1611
EthicsLine (24-hr., third party administered; confidential)	1-800-999-9057
University-wide Hotline	1-800-403-4744
California Bureau of State Audits	1-800-293-8729
EH&S Suggestion Box	http://ehswprod.lbl.gov/mis/suggestions/suggestionsForm.asp

C. CORE EH&S FUNCTIONS AT THE DIVISION / DEPARTMENT LEVEL

Berkeley Lab consists of several research and support divisions and departments with a broad range of functions and activities. Corresponding to the uniqueness and diversity of these organizational elements, the EH&S issues faced by them vary greatly and are addressed in a manner tailored to each division or department.

1. Work Planning

Minimum requirements for work planning and documentation of work planning are described in Section 1.3 of the OAP. The OAP identifies hazards, risks, and corresponding standards and controls consistent with this Integrated ES&H Management Plan. Work planning at this level is rolled up to the institution and becomes part of the Berkeley Lab Strategic Plan.

The IHA, conducted in 1996, catalogued the work of each division or department from an ES&H perspective. The product of this work was the essential resource in defining the WSS set. The write-up of the IHA constitutes a summary of all work authorized in a given division or department. The divisions will update these summaries as part of the IFA process.

Berkeley Lab–related work on campus is carried out in accordance with the "PARTNERSHIP AGREEMENT BETWEEN UCB AND LBNL CONCERNING ENVIRONMENT, HEALTH AND SAFETY POLICY AND PROCEDURES" dated 3/15/2004. This document delineates responsibility and oversight of EH&S requirements for work carried out in LBNL and campus spaces. It establishes a clear expectation that Berkeley Lab managers will take the initiative in following locally applicable ES&H rules, and specifies that work carried out at LBNL, including the Berkeley West Biocenter, and Donner and Calvin Laboratories, is carried out in accordance with LBNL rules, and that work carried out elsewhere at UCB is governed by UCB rules. The document is attached as Appendix G.

2. Hazard and Impact Analysis

A comprehensive hazard analysis was part of the 1996 IHA for each division or department. Each of the work activities identified was evaluated, and the level of concern presented by the activity was determined as low, medium, or high. The determination was based both on the underlying risk and on the likelihood of occurrence in light of the controls present.

As IFAs are conducted at the division level, the hazard and risk inventory is reviewed and updated. New hazards and risks are then reviewed against the WSS, and any needed changes to the WSS are rolled up to the institutional level.

3. Establishment of Controls

Appropriate controls for activities at Berkeley Lab are described in LBNL/PUB-3000. At the division level, these controls are implemented based on the hazards or risks present and how the division functions. Berkeley Lab's divisions and departments apply a wide variety of controls over ES&H

concerns. To implement such controls, all have an EH&S coordinator (full-time or part-time) and an EH&S committee. These entities perform and/or coordinate self-assessments, management of chemical inventories, and compliance activities.

Given the diverse scientific and operational activities, a single set of hazard management controls is not practical. Therefore, in 1998, each division or department developed its own tailored ES&H plan, which describes its ISM efforts and assures the Berkeley Lab Director that EH&S issues are appropriately addressed. A template for such a plan is found in Appendix H.

Division ES&H plans describe in detail how work is reviewed and authorized at the activity or project level to determine and assure line management, supervisory, and employee safety responsibilities are identified and implemented; they also address qualifications and training, as well as engineering and procedural requirements.

4. Work Performance

Work performance in this context consists of implementing a division/department ES&H plan that is fully integrated with the organization's normal mode of operations. Approved ES&H plans ensure that each organization has internal procedures and mechanisms for implementing ES&H requirements. These ES&H plans also ensure that appropriate ES&H professional expertise is made available to the organization.

5. Feedback and Improvement

The division/department ES&H plans are expected to contain a mechanism for continuous improvement or sustained excellence specifically tailored to the operations. Each division is required to conduct self-assessments that evaluate EH&S management and identify hazards and corrective actions. Divisions receive numerous items of information relating to their performance that enable them to assess their EH&S management systems. These include, among others,

- Division inspections
- Accident reports and statistics
- Personnel exposure reports and statistics
- Environmental assessments and reports
- Waste management reports.

Each division prepares an annual self-assessment report and submits it to OAA. Lessons learned from this process are incorporated into the division's ES&H program for continuous improvement. This process is described in detail in the LBNL/PUB-5344, the ES&H Self-Assessment Plan. Self-assessment criteria have been expanded to include an evaluation of the ES&H Plan. The criteria are shown in Appendix J, Integration of ISMS Principles to Division Self-Assessment. This constitutes the primary mechanism for feedback and continuous improvement. For future years, the self-assessment program will include questions about the effectiveness of ES&H plans. Results of the self-assessments are summarized annually and reviewed by the Berkeley Lab Director.

Divisions are also subject to an ES&H management peer review by the institutional Safety Review Committee (refer to Appendix L). As part of this process, management of the ES&H functions, accident prevention, follow-up on corrective actions, and self-assessment efforts are reviewed, and the division director is furnished with recommendations. These are considered for incorporation into the division's ES&H program in future years.

Divisions are also reviewed through the ES&H IFA, which is a technical review of ES&H concerns by EH&S professionals. Recommendations relating to technical hazards and ES&H management issues are reported to division directors for follow-up action.

Finally, divisions and departments are also subject to external review by regulatory agencies, such as EBMUD for wastewater discharges, Cal/EPA DTSC for hazardous waste and environmental restoration activities, US/EPA for radiological air emissions, BAAQMD for chemical (non-radiological) air emissions, City of Berkeley for hazardous materials and waste storage, and DOE for a broad range of concerns. Each review by an external agency provides feedback regarding the effectiveness of the Lab's compliance programs and may lead to improvements.

Each division/department that has prepared an ISM (ES&H) plan will annually perform an internal self-assessment review. This effort helps to ensure that the plan is current and addresses its ES&H program/operational needs. The review is formally signed off by the division/department management. Any substantive changes/updates to division/department-level ISM plans are forwarded to the EH&S Division Director for approval and sign off. In addition, as part of the triennial MESH review, each division/department undergoing such a review will formally schedule and present an executive summary of its ISM performance (and lessons learned) to the Berkeley Lab ISM Board (composed of the two Deputy Laboratory Directors, the EH&S Division Director, and the SRC Chairperson).

A variety of formal communication methods have been established at Berkeley Lab which enable division employees to report environmental, health, and safety concerns or safety suggestions. Employees may file a concern directly with their division director, department head, immediate supervisor, principal investigator, or division safety coordinator; or send an email to safetyconcerns@lbl.gov as well as seek assistance from LBNL Internal Audit Services and Assessments (IASA), their EH&S Division Liaison, or the Department of Energy. Persons reporting hazards or improper activities are fully protected by the law and Lab policy against reprisal.

D. CORE EH&S FUNCTIONS AT THE PROJECT OR ACTIVITY LEVEL

In contrast to the previous organization levels, it is at the project or activity level that EH&S requirements often become the most specific.

1. Work Planning

Each PI, supervisor, or manager must ensure that ES&H concerns are properly identified and addressed in the planning and budgeting processes. The complexity of the planning and the level of documentation required vary greatly, depending on the nature of the work, but the manager is required to provide evidence of appropriate planning. This requirement is made explicit in the "Planning" subsection of the OAP.

Examples of planning activities include:

- Operation and planning meetings (e.g.., staff meetings, project meetings, program reviews).
- Research and program proposals that describe the work objectives and the proposed actions/steps
- Division ES&H plans that describe the division's safety management system.
- Work plans or work authorizations that address work objectives, resource requirements, scheduling, work hazards, and the implementation of safety controls
- Work or project management schedules
- Organizational policies and procedures
- Performance measures and results"

For each research proposal, the PI must complete a NEPA/CEQA/EH&S checklist, which steers the researcher to additional levels of review for potentially hazardous or regulated activities. As a result of this preliminary process, analyses and controls described in the following section may be required.

The planning requirements for support functions are usually less complicated, given that support work typically follows standard industry practice and is largely routine. Hence, planning is typically focused on budgeting and scheduling of adequate resources, rather than on hazards reviews of new activities.

An essential element of work planning in either case is assurance of staff proficiency. A comprehensive system is in place to ensure that employee qualifications, competence, and certifications are addressed in the initial hiring, through performance plans and evaluations, and through ongoing training, including ES&H training. This is documented in the employment and performance evaluation processes in the RPM, LBNL/PUB-201, and also in the OAP's "Staff Proficiency" subsection.

Berkeley Lab–related work occurring in campus space is carried out in accordance with the "PARTNERSHIP AGREEMENT BETWEEN UCB AND LBNL CONCERNING ENVIRONMENT, HEALTH AND SAFETY POLICY AND PROCEDURES" dated 3/15/2004. This document delineates responsibility and oversight of safety requirements for work carried out in

LBNL and campus spaces. It establishes a clear expectation that Berkeley Lab managers will take the initiative in following locally applicable ES&H rules, and specifies that work carried out at LBNL, including Donner and Calvin Laboratories, is carried out in accordance with LBNL rules, and that work carried out at UCB is governed by UCB rules. The document is attached as Appendix G.

- Lab PIs have an obligation to Berkeley Lab management to provide a safe workplace for all Berkeley Lab-sponsored work. For LBNL work at UCB, this obligation is satisfied by complying with the UCB Safety System.
- Lab PIs are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. The type and method of training will be specified by the organization providing the ES&H services or oversight to the space where the work will be performed.
- Lab PIs conducting Berkeley Lab–sponsored work are encouraged to implement controls and other measures beyond the core institutional requirements if they deem it appropriate.
- Lab PIs working at UCB can request a joint safety assessment (to be conducted by representatives of both the UCB and LBNL EH&S organizations) to further aid them in ensuring a safe workplace.
- Lab PIs conducting Berkeley Lab-sponsored research will provide an assurance that they have met the appropriate standards, including properly specifying training requirements (for themselves, workers, and students), obtaining and adhering to work authorizations, and meeting self-inspection requirements.

2. Hazard and Impact Analysis and 3. Establishment of Controls

As part of the planning process, PIs, managers, and supervisors are required to determine whether or not EH&S hazards, risks, and concerns are present, and to implement appropriate controls as outlined in LBNL/PUB-3000. For the bulk of the work, the hazards and risks are minimal, and ES&H precautions are routine. PIs, managers, and supervisors are simply required to ensure that the employee knows how to perform the work safely and in conformance with ES&H requirements, and to provide on-the-job training as needed.

Additional training and certification are required for work involving special hazards. These training courses are identified for each individual by completing the Job Hazards Questionnaire (JHQ) and enrolling the employee in EH&S courses corresponding to the specific hazards encountered. JHQs are completed for each new employee and long-term visitors, and they are updated annually as part of the employee's performance evaluation and whenever an employee is assigned to a new position or to tasks with new hazards.

Over the history of Berkeley Lab, certain work has been recognized as posing special hazards that require additional scrutiny. These are summarized in Chapter 6 of LBNL/PUB-3000, and they are covered to the required level of detail in other chapters of LBNL/PUB-3000 and elsewhere. Depending on the hazard, the principal investigator, supervisor, or manager must document the work and associated hazards, describe administrative and engineering controls, and document training or certification for the participants. The various processes ensure that experts with appropriate

certifications or background are brought into the process for review or approval. The following categories of ES&H documentation and certification are recognized:

- Activity Hazard Document (AHD)
- Biosafety Registration
- Confined Spaces Permit
- Crane Operator Permit
- Electrical Work Approvals
- Engineering Safety Notes
- Forklift Operator Permit
- Lock-Out / Tag-Out Procedure
- Open Flame Permit
- Radiological Work Permit (RWP)
- Radiological Work Authorization (RWA)
- Respiratory Protection User Certification
- Safety Analysis Document (SAD)
- Safety Analysis Report (SAR)
- Sealed Source Authorization (SSA)
- Telecommuting Agreement

In addition, certain operations require environmental operating permits from external regulatory agencies or must follow standards of operations as required by law. General categories of activities that may require permits include:

- Air emissions
- Hazardous waste storage
- Storm water discharges
- Waste treatment units
- Underground tank storage
- Wastewater discharges

On a broader basis, new construction projects and facilities modifications are reviewed for hazards and risks, and to ensure that appropriate ES&H requirements are integrated into the planned project or facility. ES&H requirements identified through this process are incorporated into the project's design. EH&S Division participation in this process is covered by the Memorandum of Understanding entitled "Interface Policy Between EH&S & Facilities: Project Support," 5/11/94 (see Appendix J). Major projects are assigned an EH&S lead and support team of subject matter experts, and minor projects are supported by an EH&S representative.

The product of Berkeley Lab is research, and Berkeley Lab activities are also reviewed to ensure that "product stewardship" obligations are met. All proposals for new work are subjected to a NEPA/CEQA/EH&S review as described under Section D-1, Work Planning. This review can be regarded as a general product stewardship review for Berkeley Lab operations. Research that affects

human beings or animals directly is specifically reviewed to assure that current legal and ethical standards are met. Three separate mechanisms are used:

- Animal Welfare and Research Protocol
- Human Use Protocol
- Radioactive Drug Research Protocol

These protocols are reviewed through various statutory committees under the direction of the Berkeley Lab Medical Director. This process is detailed in LBNL/PUB-3000, Chapter 22.

All of these processes are designed to ensure that all projects and activities address ES&H concerns routinely. The principal investigator or manager has considerable latitude and corresponding responsibility in choosing how to address ES&H concerns. At the same time, there is always the expectation that all ES&H requirements deriving from Work Smart Standards, Laboratory policy, or external regulatory authorities are satisfied.

4. Work Performance

PIs, managers, and supervisors are responsible for ensuring that all applicable ES&H requirements are implemented for all operations under their purview; and that all employees, visitors, and participating guests are expected to know these requirements and observe them in their work. In addition, a "Stop Work" procedure exists that requires the termination of any activity that poses an imminent danger to life or limb. These requirements are detailed in Chapter 1 of LBNL/PUB-3000 and in Chapter 7 of the RPM.

In some cases, activities that result in significant environmental impacts will be addressed at the project or activity level. In these cases, a representative from the EMS core team will work directly with Laboratory staff to determine potential methods for reducing the impacts. The EMS Core Team representative will develop an Environmental Management Program (EMP) that formally establishes the appropriate set of actions, identifies resource needs, develops procedures, metrics, or techniques, and sets up schedules.

5. Feedback and Improvement

Activities and projects are reviewed through various assessments, including the division self-assessment, EH&S inspections, the IFA, the SRC Management of Environment, Safety, and Health (MESH) review, and regulatory inspections and audits by external agencies. While these activities are usually conducted for facilities or divisions rather than individual projects or activities, results are given to the individual principal investigator, manager, or supervisor to facilitate improvements at the working level. This provides the opportunity for improved ES&H performance or for sustained excellence for each of the activities covered during such assessment.

The Site Environmental Reports (SER) and the Radiological Air Emissions Reports also provide feedback at the project or activity level. These reports provide information regarding environmental performance and monitoring activities for each calendar year. They:

- demonstrate that Laboratory projects or activities operate within regulatory and DOE requirements;
- provide a historical record of any Laboratory impacts on the environment;
- support environmental management decisions; and
- provide data on the effectiveness of emission control programs.

In addition, the SER includes information on operating permits, audits and inspections, DOE-reportable incidents, and all environmental compliance programs at Berkeley Lab. In addition, the Radiological Air Emissions Report shows the radiological impacts on the public and the local environment from Berkeley Lab projects and activities, and compares them to regulatory limits. Copies are provided to key Laboratory staff, regulatory agency representatives, DOE and other DOE organizations, and community representatives. The SERs are also posted on the Web at: http://www.lbl.gov/ehs/epg/html/env_protection.htm.

Employees should report environmental, health, and safety concerns or suggestions directly to their supervisor, principal investigator (PI), technical lead, or division safety coordinator. Employees may also use a variety of reporting mechanisms described at http://www.lbl.gov/ehs/refs/safety_concern.shtml, which include Internal Audit Services and Assessments (IASA), their EH&S Liaison, or the Department of Energy. Persons reporting hazards at the project or activity level are fully protected by the law and Lab policy against retaliation.

The available reporting mechanisms include:

LBNL Safety Concerns Web Page	http://www.lbl.gov/ehs/refs/safety_concern.shtml
LBNL Internal Whistleblower Hotline (24-hr. voicemail)	1-510-486-6300
U.S. DOE Employee Concerns Hotline (24-hr. voicemail)	1-510-637-1611
EthicsLine (24-hr., third party administered; confidential)	1-800-999-9057
University-wide Hotline	1-800-403-4744
California Bureau of State Audits	1-800-293-8729
EH&S Suggestion Box	http://ehswprod.lbl.gov/mis/suggestions/suggestionsForm.asp

E. ES&H MANAGEMENT OF CONTRACTOR, GUEST, AND VISITOR ACTIVITIES

1. General

Berkeley Lab is committed to implementing ES&H requirements for activities involving contractors, participating guests, and visitors, while maintaining an appropriate business relationship that does not result in the assumption of liability for contractor operations. The exact requirements for these relationships for all three UC/DOE laboratories are governed by the UC Laboratory Procurement Policy and Standard Practices (SPs) Manual.

SP 23.1 contains a "Work on University or Government Premises Clause," which is inserted into all subcontracts. It specifies that contractors will follow all applicable ES&H requirements and will protect the interests of the University. Berkeley Lab has implemented the provision of this plan to the extent possible under the current University policy, and will work diligently with the UCOP to make necessary changes to the "Work on University or Government Premises Clause" to implement the remainder.

Berkeley Lab has also published a handbook of safety policy, requirements, and technical guidance entitled "Integrated Safety Management for Employees, Contractors, Participating Guests, and Visitors" (LBNL/PUB-811, found on the Web at http://www.lbl.gov/ehs/pub811/). The booklet is intended to provide all personnel an overview of ISM, responsibilities for its implementation, ESH information, and available resources. Each new employee, guest, or contract worker is required to sign off on the "LBNL Environment, Health, and Safety Work Agreement" (http://www.lbl.gov/ehs/pub811/agreement.html). Employees completing this form will have a hard copy placed in their personnel file, while contractors, participating guests, and visitors will have their forms on file with the host division/department ES&H Coordinator.

2. Matrixed Employees

An employee is considered matrixed if the employee has a "home" division or department from which he/she is assigned to work in a "host" division or department and receives daily directions exclusively from the host organization. The host division or department also provides physical space and oversight.

- The employee's supervisor from the home division or department retains all health and safety responsibilities pertaining to matrixed employees, except where some of the responsibilities have been transferred to the host division or department through a formal Memorandum of Understanding (MOU) between the two organizations.
- In situations where an employee is assigned to provide support to more than one "host" organization, the responsibility for employee health and safety remains with the "home" supervisor and cannot be transferred by an MOU.
- The home and host organizations, through a blanket MOU, are to identify the safety responsibilities for their respective supervisors and employees. The following table specifies which responsibilities may be transferred to the host supervisor and those that must be retained by the home organization's supervisor.

Safety Responsibility	Home Supervisor	Host Supervisor	Matrixed Employee
JHQ and JHQ-Identified Training	Retains responsibility to assure all required JHQ training is completed in a timely manner	Provides input to home supervisor during JHQ completion.	Complete JHQ; review annually with "home" supervisor and update as needed.
On-the-Job Training	Clarify how each (or which) organization will subsidize the cost of training and employee time to attend training.	Provides specific safety training and operating procedures to matrixed employee for work performed for host organization.	Acquire on-the-job and formal EH&S training before commencing work.
Self-Assessment Program of Matrixed Employee's Workspace	Negotiable with host supervisor.	Negotiable – may assume responsibility.	Keep work areas safe and uncluttered.
Hazard Correction of Matrixed Employee's Workspace	Negotiable with host supervisor.	Negotiable – may assume responsibility.	Report unsafe conditions and practices to supervisor in a timely manner.
Engineering Controls for Health and Safety	Negotiable with host supervisor.	Negotiable – may assume responsibility.	Utilize the installed engineering controls in your work area.
Personal Protective Equipment (PPE)	Negotiable with host supervisor. If supplied by home organization, matrixed employee may take PPE to next job assignment.	Negotiable — may assume responsibility. If supplied by host organization, PPE remains when matrixed employee leaves.	Understand the capabilities and limitations of PPE issued to you and wear PPE when performing tasks.
Administrative Controls for ES&H, including AHDs, RWAs, RWP, etc.	Negotiable with host supervisor.	Negotiable – may assume responsibility.	Follow prescribed administrative controls when performing work.
Accident Investigation and SAAR Reporting	Retains responsibility for investigating incident to determine root cause(s) and complete necessary reports in a timely manner. Assures that corrective actions are completed to prevent recurrence to matrixed employee.	Provides input during the investigation process and into the SAAR.	Report all work injuries/illnesses, accidents, and discomfort symptoms to both supervisors; seek medical assistance from LBNL Health Services. Provide input during the SAAR investigation process.
Ergonomics	Retains responsibility for assuring any required ergonomic awareness training (EHS 60) and ergonomic workstation evaluation (EHS 68) are completed prior to performing work assignments for host organization.	Provides the appropriate ergonomic furniture and accessories that enables "matrixed" employees to safely perform their computer-related tasks.	Request Ergonomic Workstation Evaluation and take EHS 60 training. Perform work with proper ergonomic practices. Adjust and use ergo equipment properly.

- Whenever an MOU is established, it remains the responsibility of the home supervisor to assure that the MOU is appropriately implemented.

- In the absence of an MOU, the home supervisor remains fully responsible and accountable for all aspects of the subordinate's workplace safety and health.

3. Students

Education and training of future generation of scientists and engineers is one of the University's missions and Berkeley Lab has a special responsibility to teach students to do their research safely. Part of teaching them to work safely is to ensure they are provided a safe and healthful work place. This obligation for providing a safe and healthful working and learning environment extends to students, guests, and visiting scholars, compensated or not.

The Division's ISM system should address student safety in: formal work authorizations, line management-authorized work without formal authorizations, and Appendix I space on UCB campus.

- Formal Work Authorizations –

  Higher-hazard work at Berkeley Lab is subject to formal work authorizations as described in the LBNL Health and Safety Manual (Pub 3000), Chapter 6. Examples of such documentation include: Radioactive Work Authorizations (RWAs), Sealed Source Radioactive Materials Authorization (SSAs), Activity Hazard Documents (AHDs), and Biological Use Authorizations (BUAs), etc.

  It is the line manager's/supervisor's/PI's responsibility to ensure students are added to a formal authorization and receive the specified training before they begin work under it. Students, like employees, participating guests and contractors, must follow the authorization's requirements.

  For students who are involved for short periods, it is permissible to work under a formal work authorization so long as they are directly supervised by a trained lab employee listed on the authorization and the issuing authority has concurred.

  Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus formal work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

- Line Management Work Authorization –

  Lower hazards are also described in Chapter 6, which allows line management to authorize work without a formal work authorization. Line managers/supervisors/PIs are required to assess the hazards of such work and prescribe the appropriate controls (engineering and administrative) to address the hazards and to ensure students have appropriate training before doing work.

Use of the LBNL Job Hazards Questionnaire (JHQ) will assist in identifying the safety training necessary to prepare the students to work safely. To utilize this online system, the student must be assigned an employee identification, LDAP username, and password. A JHQ must be completed for a student working at Berkeley Lab longer than three months, and training must be completed within six months. Students at Berkeley Lab for more than one month are to attend New Employee Orientation.

There may be uncompensated students participating in Berkeley Lab research projects for a brief period, and these individuals may not have an opportunity to receive an LDAP username and password. Under this scenario, Chapter 6 allows for a student to work without formal training if the student is "supervised directly by a worker who has already obtained the required training." Those workers assigned this responsibility need to clearly understand their oversight role. This does not relieve the line manager, supervisor, or PI from accountability for assuring a safe work place.

Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus line management work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

4. Participating Guests and Visitors

Participating guests and visitors are those individuals who work at Berkeley Lab without remuneration from Berkeley Lab, typically in close collaboration with a Berkeley Lab researcher.

Participating guests and visitors are required to follow all Berkeley Lab ES&H requirements, and the Berkeley Lab host is responsible for ensuring that the individuals meet the requirements, or that they are escorted or supervised by fully qualified individuals. See LBNL/PUB-3000, Chapter 1.

5. Contract Labor

Contract labor personnel are employees of other organizations who work at Berkeley Lab for short periods of time, usually to help with peak loads or to fill in for temporarily absent personnel. While they may perform the same work as Berkeley Lab employees, compensation and benefits are received through a private employer.

Contract labor personnel are required to follow the same ES&H requirements as Laboratory employees; they are included in all accident-prevention corrective actions on the same basis as Berkeley Lab employees.

LBNL/PUB-3000 emphasizes that contract labor personnel are generally subject to the same ES&H requirements as Berkeley Lab employees, including comparable requirements for employee selection and training to ensure that they can perform the work safely. Divisions have the option of performing

this screening themselves or through the contractors, but will be required to demonstrate compliance for these individuals.

6. Construction Contractors

Construction contractors are those contractors that construct new facilities or perform facilities modifications under lump-sum or cost-plus construction contracts, using their own supervisory personnel.

Berkeley Lab maintains a comprehensive construction EH&S program, which is documented in LBNL/PUB-3000. The program requires major contractors to submit construction EH&S plans, and smaller contractors to submit EH&S checklists. These plans and checklists are reviewed and must be approved by Berkeley Lab before work begins. Berkeley Lab also maintains a comprehensive program to ensure that contractors meet other EH&S responsibilities, such as the preparation of environmental permitting and reporting documents. Berkeley Lab project managers and other construction management personnel enforce compliance with these plans and with agreed-upon construction EH&S standards as part of their normal management functions. In addition, a full-time construction safety engineer backs up Berkeley Lab construction management personnel with technical consultations and frequent construction site visits. Subject matter experts from the various EH&S disciplines provide technical support on an as-needed basis.

Construction, Renovation and Maintenance in Appendix I Space (see Appendix B to the Partnership Agreement).

- When UCB performs maintenance work in Appendix I space, or when either Berkeley Lab or UCB wishes to modify facilities in Appendix I space, UCB will provide all project services, including safety and environmental oversight as needed.
- Berkeley Lab EH&S may, through UCB EH&S, also provide oversight when the work has the potential to affect LBNL employees.

Construction, Renovation and Maintenance at Donner and Melvin Calvin Laboratories (see Partnership Agreement, Appendix B).

- When LBNL requests and funds UCB to modify these facility spaces, UCB will prepare work plans and specifications to meet LBNL functional requirements and gain all necessary approvals. UCB will perform the work using contractors or campus staff.
- When UCB funds and modifies these facility spaces, UCB Facilities Services will plan the work and conform to the California Building Code and UCB design standards. The LBNL Building Manager will receive plans for review and be notified of the approximate work start time and date. UCB EH&S will provide construction-phase safety and environmental oversight as needed with the exception of radiological issues (LBNL will act as lead EH&S office).
- When LBNL funds and modifies these facility spaces, LBNL will plan the work and conform to the California Building Code and UCB design standards. The LBNL Building Manager will

receive plans for review and be notified of the approximate work start time and date. LBNL EH&S will provide construction-phase safety and environmental oversight as needed.
- All modifications, regardless of requestor or funding source, are subject to UCB Campus Fire Marshal (CFM) and Construction Inspection Services (CIS) inspections.

Berkeley Lab further enhanced construction safety by adopting a "Bid Evaluation Procedure for Construction Projects Greater Than $1,500,000." This process ensures, through evaluation of past performance and/or established programs, that the successful bidder is capable of performing construction safely, with high quality, within budget, and in a timely manner.

7. Service Contractors With A Major Presence

Service contractors are those contractors that perform a variety of functions for Berkeley Lab on the Berkeley Lab site. Service contractors with a major presence are defined as those that have ten or more employees on the Berkeley Lab site at any one time. Examples include the cafeteria and security contractors.

Berkeley Lab is working with UCOP to change University procurement regulations to permit the institution of the following additional safety requirements. LBNL/PUB-3000 and the procurement contracts will be amended to require that contractors with more than ten employees on site on an ongoing basis provide

- a copy of their California Occupational Safety and Health Administration (Cal-OSHA) Injury and Illness Prevention Program (IIPP) for approval
- copies of OSHA-recordable injury and illness reports
- quarterly summaries of hours worked on site.

Berkeley Lab will review the IIPPs and will negotiate changes as needed to assure adherence to ES&H requirements and the best interest of the Laboratory. Berkeley Lab will also monitor contractor injury performance to verify effectiveness of contractor IIPPs.

8. Other Service Contractors

Many of the service contractors are present on site for short periods of time and perform specialized functions, e.g., scientific instrument repair. Often these services are performed on a short notice or emergency basis and require specialized ES&H expertise by the contractor.

Berkeley Lab amended LBNL/PUB-3000, the procurement contracts, and Berkeley Lab procedures to reflect the following:

- Berkeley Lab published a brochure (LBNL/PUB-811; http://www.lbl.gov/ehs/pub811/index.html) describing EH&S requirements generally applicable to contractor employees, and makes the Web site of the brochure known to all contractors. The brochure contains a requirement that copies of reports for all OSHA-recordable injury and illness cases occurring on site be furnished to Berkeley Lab.

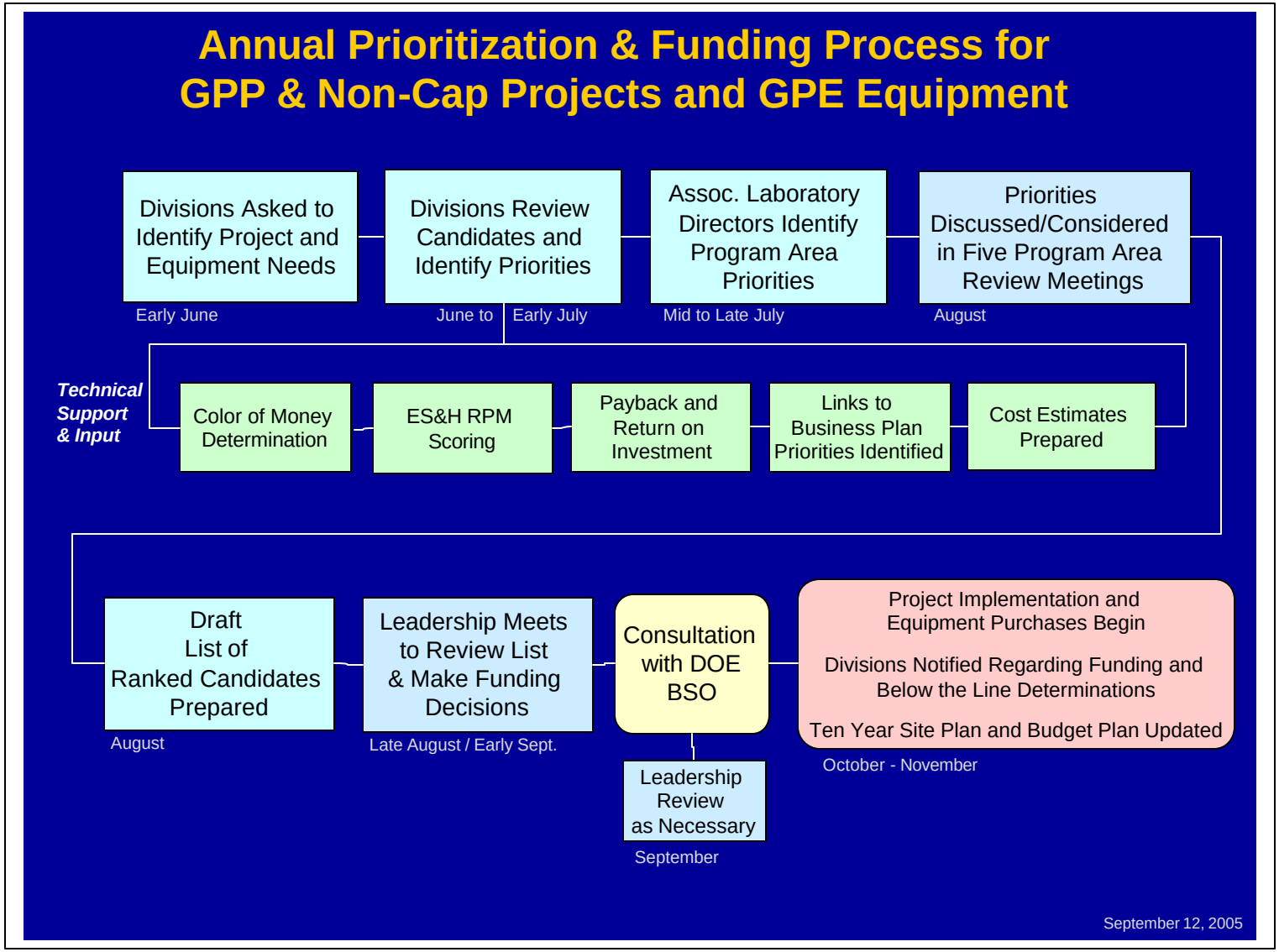
- Berkeley Lab revised LBNL/PUB-3000 and the RPM to hold all principal investigators, managers, and supervisors accountable for:

    - selecting contractors that are demonstrably competent to perform within ES&H limits;
    - ensuring that contractor employees are not put at risk due to Berkeley Lab operations; and
    - ensuring that contractor operations do not put Berkeley Lab employees at risk.

Appendix A

Annual Prioritization & Funding Process

GPP & Non-Cap Projects and GPE Equipment


Annual Prioritization & Funding Process for GPP & Non-Cap Projects and GPE Equipment
Divisions Asked to Identify Project and Equipment Needs
Early June
Divisions Review Candidates and Identify Priorities
June to Early July
Assoc. Laboratory Directors Identify Program Area Priorities
Mid to Late July
Priorities Discussed/Considered in Five Program Area Review Meetings
August
Technical Support & Input
Color of Money Determination
ES&H RPM Scoring
Payback and Return on Investment
Links to Business Plan Priorities Identified
Cost Estimates Prepared
Draft List of Ranked Candidates Prepared
August
Leadership Meets to Review List & Make Funding Decisions
Late August / Early Sept.
Consultation with DOE BSO
Leadership Review as Necessary
September
Project Implementation and Equipment Purchases Begin
Divisions Notified Regarding Funding and Below the Line Determinations
Ten Year Site Plan and Budget Plan Updated
October - November
September 12, 2005

Appendix B

Integrated Environment, Health, and Safety Management Plan

Summary Table

Core Functions	Institutional Level	Divisional Level	Project or Activity Level
1. Work Planning	• Berkeley Lab Institutional Plan • EMS Plan • EM 10-Year Plan	• OAP Section 1.3 • Integrated Hazard Assessment (Scope Statement only)	• Environmental Management Programs (objectives and targets for reducing environmental impacts) • OAP Section 1.3 (Research proposals, operations meetings, project plans, etc.) • NEPA/CEQA/EH&S checklist (research proposals for new work) • Integrated Hazard Assessment (Scope Statement only)

2. Hazard and Risk Analysis	• Roll-up of Integrated Hazard Assessment	• Integrated Hazard Assessment (IHA)
		• Integrated Functional Appraisal (IFA)
		• Safety Analysis Document (SAD)
		• Safety Analysis Report (SAR)
		• Preliminary Hazard Analysis (PHA)
			2&3 Hazard and Risk Analysis and Establishment of Control:
			• Activity Hazard Document (AHD)
			• Animal Welfare & Research Protocol
			• Confined Spaces Permit
			• Crane Operator Permit
			• Electrical Work Approvals
			• Engineering Safety Notes
			• Forklift Operator Permit
			• Human Use Protocol
			• Lock-Out / Tag-Out Procedure
			• Open Flame Permit
			• Radiation Work Permit (RWP)
			• Radioactive Drug Research Protocol
			• Radioactive Work Authorization (RWA)
			• Respiratory Protection User Certification
			• Safety Analysis Document (SAD)
			• Safety Analysis Report (SAR)
			• Sealed Source Authorization (SSA)
			• Environmental operating permits:
			  • Air Emissions
			  • Hazardous Waste
			  • Storm Water Discharges
			  • Waste Treatment Units
			  • Underground Storage Tanks
			  • Wastewater Discharges

Core Functions	Institutional Level	Divisional Level	Project or Activity Level
3. Establishment of Control	• Work Smart Standards • LBNL/PUB-201, Regulations & Procedures Manual (RPM) • LBNL/PUB-3000, Health & Safety Manual • LBNL/PUB-3111, Operating and Assurance Plan (OAP) • LBNL/PUB-5344, Environment, Safety & Health Self-Assessment Program	• Division EH&S Plan • Notebooks • LBNL/PUB 3000	See above

4. Work Performance	• Actual work is performed at the Project or Activity Level
	• Development and Maintenance of EH&S Guidance Documents:
	  • RPM
	  • LNBL/PUB 3000
	  • OAP
	  • EH&S Self-Assessment
	  • WSS set
		• Implementing Division/Department EH&S Plan
		• Managing research
			• Perform Work
			• "Stop Work" procedure (LBNL/PUB 3000, Chapter 1, & RPM, Chapter 7)
			• Implement controls

5. Feedback and Improvement	• External:
	  • Federal, State and City Regulatory Agencies
	  • DOE
	  • UC
	• Internal;
	  • Laboratory Self-Assessment Report (Roll-ups: SRC-MESH Review, Division Self-Assessment, EH&S IFA)
	  • Appendix F
	  • EH&S Div. Peer Review
		• External
		  • Federal, State and City Regulatory Agencies
		  • DOE
		• Internal
		  • SRC-MESH Review
		  • Division Self-Assessment
		  • EH&S IFA
		  • OAA Validation
		  • Accident Reports
		  • Occurrence Reports
			• SRC-MESH Review
			• Division Self-Assessment
			• EH&S Routine Reports (SAA, RWA, Dosimetry Reports etc.)
			• EH&S IFA
			• OAA Validation
			• Accident Reports
			• Occurrence Reports
			• Lessons Learned

	• Lessons Learned	• Lessons Learned	

Appendix C

Berkeley Lab PUB-3111

Operating and Assurance Plan (OAP)

http://www.lbl.gov/ehs/oap/oap_home.htm

Appendix D

Work Smart Standards Approval Process

http://www.lbl.gov/Workplace/NS-Program/

Update of David McGraw's WSS Letter (5/28/98)

April 2, 2001

MEMORANDUM

TO: Distribution

FROM: David McGraw, Director
Environment, Health, & Safety Division

SUBJECT: Work Smart Standards Update Process

In 1996, the Department of Energy accepted Berkeley Lab's set of Work Smart Standards (WSS) within Appendix G of Contract 98. The WSS set was developed through the Necessary and Sufficient process in November 1996 to assure adequate protection for Lab employees, the public and the environment. It is composed of federal, state and local laws, as well as national and international consensus standards. Moreover, this process has also screened and omitted many DOE Orders that are not applicable to the kind of work conducted at LBNL. These standards were selected on the basis of the type of work performed as well as the hazards present at the Laboratory and serve as the agreed upon basis for operating the Lab in a safe, efficient and cost-effective manner.

Because of the dynamic nature of the Laboratory's research activities and the changes that may occur in the regulatory environment, it is necessary to ensure our WSS set remains current. Updates to our WSS set would be required if Divisions engage in work activities that are not covered by the existing set, and/or if the laws and standards comprising the set change. Ross Fisher of the EH&S Division Safety Engineering Group has been assigned the responsibility of being the LBNL WSS Coordinator for managing this effort. His responsibilities are as follows:

1. In conjunction with the DOE BSO WSS Coordinator, administers the annual WSS Review and Update Process.

2. Assigns teams of subject matter experts to review standards to identify changes in regulations that trigger updates to the WSS set.

   Note: a "Change" is defined as a modification in a standard's citation number, the addition or deletion of requirements within an existing standard, or the addition of an entirely new standard.

3. Assigns teams of appropriate Division personnel and technical expertise to identify new work and/or changes to existing work within each Division that may impact the WSS set.

4. Analyzes the results of the team reviews, meets with appropriate Division personnel and technical experts as necessary, compiles the findings and generates the annual review report and WSS change recommendations.

The enclosed flow charts delineate the process for updating our WSS set.

An annual roll up will be provided to me in order that proposed changes may be reviewed with the appropriate parties and that necessary updates are made to the WSS set.

If you have any questions regarding the WSS update process, please contact Ross Fisher at extension 6934.

Distribution:
Sally Benson
Jeffrey Chung
Ross Fisher
Karl Olson
Robin Wendt
Division Safety Coordinators
EH&S Division Liaisons
EH&S Division Group Leaders
EH&S Division Technical Leads
Richard Nolan, Berkeley Site Office

Appendix E

Berkeley Lab PUB-3000

Health & Safety Manual, Chapter 1

http://www.lbl.gov/ehs/pub3000/

Appendix F

UC-DOE Contract 98

Appendix F Self-Assessment

http://www.lbl.gov/LBL-Documents/Contract-98/AppFSecAPartII.html

Appendix G

Partnership Agreement Between

UCB and LBNL

Concerning Environment, Health and Safety

Policy and Procedures

http://www.lbl.gov/ehs/ism/ucb_lbl_partnership_3_15_04.pdf

Appendix H

Division ES&H Plan (Sample Template)

Annual Review and Update of Division/Directorate/Department ISM Plan

Division: _____

The Division/Directorate/Department ISM Plan was reviewed with no substantive changes in either content and/or ES&H resource commitment.

_____ _____
Name Date
Division Director

_____ _____
Name Date
Division Safety Coordinator

The Division/Directorate/Department ISM Plan was reviewed and has the following changes in either content and/or ES&H resource commitment:

- X
- x
- x
- x

_____ _____
Name Date
Division Director

_____ _____
Name Date
Division Safety Coordinator

_____ _____

Howard Hatayama Date
Acting EH&S Division Director

Division ES&H Plan (Sample Template – 5/04)

The Division Integrated Safety Management Plan is the guiding document developed to implement an integrated safety program for _____ Division/Department. This plan describes the mechanisms that will be applied in the division to ensure that LBNL safety policies and requirements are properly implemented. The Laboratory's ES&H policies and requirements are contained in the:

- Regulations and Procedures Manual (RPM) http://www.lbl.gov/Workplace/RPM
- Health and Safety Manual (LNBL/PUB 3000) http://www.lbl.gov/ehs/pub3000/
- Operations and Assurance Plan (OAP) http://www.lbl.gov/ehs/oap/oap_home.htm
- Work Smart Standards (WSS) set http://labs.ucop.edu/internet/wss/wss.html

This document explains which mechanisms will be maintained in this division to ensure that they are properly implemented.

Description of Division/Department Organization, Mission and Scope of Work

INSERT DESCRIPTION HERE ALONG WITH ORGANIZATIONAL CHART

Accountability

Employees, participating guests, contract labor, contractors, students and visitors are responsible for knowing and following the ES&H requirements that apply to their work. They are expected to work safely, determine which ES&H requirements apply to their work, and to cooperate with the division ES&H activities. LBNL/PUB 811, entitled, *"Integrated Safety Management for Employees, contractors, Participating Guests and Visitors: Handbook of Safety Policy, Requirements and Technical Guidance"* is a reference guide that has been prepared and made available by the EH&S Division through the Web at http://www.lbl.gov/ehs/pub811/index.html.

Individuals performing work within the division/department are responsible and accountable for ensuring that all activities are carried out in a safe manner, and in accordance with all Berkeley Lab ES&H requirements. This responsibility and accountability cannot be delegated. All contracted work under division/department auspices must be accomplished in a safe manner by ensuring that qualified contractors/contract labor/service vendors are selected, hazards are identified, and work is performed safely within its assigned space. Individuals will need to consult with qualified specialists (e.g., division ES&H coordinators and EH&S Division staff) to resolve any questions about ES&H requirements. If there is any question about the safety or environmental impact of an activity, the work should be stopped and the issue(s) resolved before proceeding. The specific policy and procedure for stopping work is found in LBNL/PUB-3000,
Chapter 1, Section 1.5 (Stopping Unsafe Work).
http://www.lbl.gov/ehs/pub3000/CH01.html#_Toc407015329

Work carried out on the UC Berkeley campus in spaces under the control of UC Berkeley will be carried out in accordance with the "PARTNERSHIP AGREEMENT BETWEEN UCB AND LBNL

CONCERNING ENVIRONMENT, HEALTH AND SAFETY POLICY AND PROCEDURES", dated 3/15/2004. This document delineates responsibility and oversight of safety requirements for work carried out in LBNL and campus spaces. It establishes a clear expectation that Berkeley Lab managers are expected to take the initiative in following locally applicable ES&H rules, and specifies that work carried out at LBNL, including Donner and Calvin Laboraties, is carried out in accordance with LBNL rules, and that work carried out at UCB is governed by UCB rules. The Partnership Agreement is an appendix in the institutional ISM Plan (Pub 3140). It can be viewed at the following URL: http://www.lbl.gov/ehs/ism/App_G.html

- Lab PIs have an obligation to Berkeley Lab management to provide a safe workplace on campus for all Berkeley Lab-sponsored work. At UCB, this is satisfied by complying with the UCB Safety System.
- Lab PIs are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. The type and method of training will be specified by the organization providing the ESH services or oversight to the space where the work will be performed.
- Lab PIs conducting Berkeley Lab-sponsored work are free to implement controls and other measures beyond the institutional requirements if they deem it appropriate.
- Lab PIs working at UCB can request a joint safety assessment (to be conducted by representatives of both the UCB and LBNL EH&S organizations) to further aid them in ensuring a safe workplace.
- Lab PIs conducting Berkeley Lab-sponsored work at UCB will provide an assurance that they have met UCB standards including properly specifying training requirements (for themselves, workers and students), obtaining and adhering to UCB work authorizations, and meeting UCB self-inspection requirements.

ES&H Committee

The division/department will maintain an ES&H (safety) committee, consisting of a chair representing the division director/department head, one representative from each research group, and the EH&S Division Liaison. The ES&H committee's activities include:

- review, maintenance, and implement the ISM plan,
- analyze SAAR injury and illness data,
- promote ES&H awareness and training,
- review the need for specialized training,
- provide for and/or conduct routine inspections and self-assessments,
- participate in planning for the triennial MESH review,
- develop metrics and analyze pertinent safety performance data,
- advise division management on ES&H issues.

The ES&H committee will prepare an annual self-assessment report for the division director that includes an evaluation of how well this division ES&H plan is implemented. The ES&H committee also will ensure that the division works to improve the effectiveness of the division ES&H program through the dissemination of lessons learned and other appropriate feedback mechanisms.

Scope of Work Authorized

a. General

The original scope of work authorized for this division was established during the 1996 Integrated Hazard Assessment. The inventory of hazards is now incorporated in the Hazard, Equipment, Authorization, and Review (HEAR) database. The scope statement is an important part of the authorization agreement and describes the range of permitted work. Annually, the ES&H committee, in cooperation with the EH&S Division, will review and update this Scope. The principal investigator will bring work outside of this scope statement to the attention of the ES&H committee prior to commencement or contractual commitment to determine EH&S impact.

b. Work Requiring Specific Approval

Each principal investigator will prepare ES&H documentation and obtain required approvals for potentially hazardous or regulated work as specified in Chapter 6 of LBNL/PUB-3000 prior to commencement of the work. The following work presently carried out in this division requires such documentation:

- (List all types of work requiring AHDs, RWAs, RWPs, Safety Notes, Environmental Permits, Biosafety Registration, Waste Permits, Animal Protocols, Telecommuting, etc.)

d. Matrixed Employees

An employee is considered matrixed if the employee has a "home" division or department from which he/she is assigned to work in a "host" division or department and receives daily directions exclusively from the host organization. The host division or department also provides physical space and oversight.

- The employee's supervisor from the home division or department retains all health and safety responsibilities pertaining to matrixed employees, except where some of the responsibilities have been transferred to the host division or department through a formal Memorandum of Understanding (MOU) between the two organizations.
- In situations where an employee is assigned to provide support to more than one "host" organization, the responsibility for employee health and safety remains with the "home" supervisor and cannot be transferred by an MOU.
- The home and host organizations, through a blanket MOU, are to identify the safety responsibilities for their respective supervisors and employees. The following table specifies which responsibilities may be transferred to the host supervisor and those that must be retained by the home organization's supervisor.
- Whenever an MOU is established, it remains the responsibility of the home supervisor to assure that the MOU is appropriately implemented.
- In the absence of an MOU, the home supervisor remains fully responsible and accountable for all aspects of the subordinate's workplace safety and health.

e. Student Safety

Education and training of future generation of scientists and engineers is one of the University's missions and Berkeley Lab has a special responsibility to teach students to do their research safely. Part of teaching them to work safely is to ensure they are provided a safe and healthful work place. This obligation for providing a safe and healthful working and learning environment extends to students, guests, and visiting scholars, compensated or not.

The Division's ISM system should address student safety in: formal work authorizations, line management-authorized work without formal authorizations and Appendix I space on UCB campus.

- Formal Work Authorizations –

  Higher hazard work at Berkeley Lab is subject to formal work authorizations as described in the LBNL Health and Safety Manual (Pub 3000), Chapter 6. Examples of such documentation include: Radioactive Work Authorizations (RWAs), Sealed Source Radioactive Materials Authorization (SSAs), Activity Hazard Documents (AHDs), and Biological Use Authorizations (BUAs), etc.

  It is the line manager's/supervisors/PI's responsibility to ensure students are added to a formal authorization and receive the specified training before they begin work under it. Students, like employees, participating guests and contractors, must follow the authorization's requirements.

  For students who are involved for short periods of time, it is permissible to work under a formal work authorization so long as they are directly supervised by a trained lab employee listed on the authorization.

  Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus formal work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

- Line Management Work Authorization –

  Lower hazards are also described in Chapter 6 which allows line management to authorize work without a formal work authorization. Line managers/supervisors/PIs are required to assess the hazards of such work and prescribe the appropriate controls (engineering and administrative) to address the hazards and to ensure students have appropriate training before doing work.

  Use of the LBNL Job Hazards Questionnaire (JHQ) will assist in identifying the safety training necessary to prepare the students to work safely. To utilize this online system, the student must be assigned an employee identification, LDAP username and password. A JHQ must be completed for a student working at Berkeley Lab longer than three months and training must be completed within six months. Students at Berkeley Lab more than one month are to attend New Employee Orientation.

There may be uncompensated students participating in Berkeley Lab research projects for a brief period of time and these individuals may not have an opportunity to receive an LDAP username and password. Under this scenario, Chapter 6 allows for student to work without formal training if the student is "supervised directly by a worker who has already obtained the required training." Those workers assigned this responsibility need to clearly understand their oversight role. This does not relieve the line manager, supervisor or PI accountability for assuring a safe work place.

Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus line management work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

f. Offsite Work

The safety of division personnel assigned to work off site at non-DOE facilities (e.g., abroad, in private industry, at educational institutions or remote field locations, etc.) will be addressed, as appropriate through the host's ES&H protection programs by the responsible line-management chain of the host organization. It is the responsibility of the employee's Laboratory line manager/supervisor to review the scope of work, associated hazards, and necessary controls with the Laboratory employee prior to offsite work. Work involving use of ionizing radiation, non-ionizing radiation, chemicals, biological agents, or exposure to physical hazards (pressure, electrical, mechanical, environmental (noise/heat/cold/vibration), industrial equipment, ergonomics, etc.) will require ISM review.

f. Telecommuting

Per LBNL policy, RPM 2.23(D)(5), telecommuting is a viable work option under certain conditions. An "Agreement & Authorization For Telecommuting" must be established between an employee and his/her supervisor. Once a telecommuting agreement officially approved, the employee's offsite workspace must be maintained by the employee in a safe condition free from hazards. If computer equipment (PC, Mac, Laptop) will be used as part of the telecommuting function, the following activities will be required to be completed and documented:

- Completion of ergonomic awareness training using either the ErgoKnowledge CD (CBT) or attending a live classroom (EHS060).
- Completion of an ergonomic self-assessment of the immediate telecommuting work area using the Laboratory Ergonomics Evaluation Form.
- Installation of the necessary ergonomic accessories identified in the self-assessment to assure the telecommuting work area provides controls against ergonomic risks.

Qualification and Training

For every individual engaged in activities other than office work, the principal investigator/supervisor will determine the requisite qualifications to function safely, and will document that the employee possesses these qualifications. Until such qualifications have been established, individuals will only be allowed to work under the supervision of a qualified employee. The LBNL Job Hazards Questionnaire (JHQ) and Training Database are mechanisms used to record course requirements and their completion. Contract labor employees, guests and students who will be at LBNL for more than 30 days are treated in the same manner as career employees for the purposes of training and qualification.

Qualifications include skills, knowledge, training, and certifications required by law or by Berkeley Lab policy. They may be documented in any manner chosen by the principal investigator, provided a copy is made for the employee's personnel file. For contract labor employees, such documentation will be furnished to the ES&H committee. Applicable information from the Laboratory's lessons-learned program and division occurrence reports will be disseminated to employees for accident prevention and hazard awareness.

Qualifications and training will be reviewed by the ES&H committee as part of the self-assessment programs. Performance evaluations (P2R/PRD) of division managers and employees will include review of ES&H performance.

Line managers are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of the work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. Classroom or specific content training, where required, will be specified by the organization providing ESH services or oversight to the space where the work will be performed.

Reporting Employee Concerns

A variety of formal communication methods have been established at Berkeley which enable division employees to report environmental health and safety concerns or safety suggestions. Employees may file a concern directly with their division director, department head, immediate supervisor, principal investigator or division safety coordinator, as well as seek assistance from LBNL Internal Audit Services and Assessments (IASA), EHS Liaison, or the Department of Energy. Persons reporting hazards or improper activities are fully protected by the law and Lab policy against retaliation.

The available reporting mechanisms include:

LBNL Safety Concerns Web Page	http://www.lbl.gov/ehs/refs/safety_concern.shtml
LBNL Internal Whistleblower Hotline (24-hr. voicemail)	1-510-486-6300
U.S. DOE Employee Concerns Hotline (24-hr. voicemail)	1-510-637-1611
EthicsLine (24-hr., third party administered; confidential)	1-800-999-9057
University-wide Hotline	1-800-403-4744
California Bureau of State Audits	1-800-293-8729
EH&S Suggestion Box	http://ehswprod.lbl.gov/mis/suggestions/suggestionsForm.asp

Balanced Resources

Principal investigators will incorporate appropriate resource allocation for ES&H concerns in all research proposals, to include provisions for safety equipment, permits, training, maintenance, permits, waste disposal, and facilities modifications. Division management will allocate appropriate resources to implement the ISM plan and program.

EH&S Resources

To facilitate implementation and execution of this division/department ISM program, the following resources are made available:

.x FTE Division EH&S Committee Chair
.x FTE Division EH&S Coordinator

The following resources are made available by the EH&S Division on a matrix basis. They are available to assist principal investigators, the ES&H committee, division management, and division staff in general with any aspects relating to the implementation of this program. The matrixed individuals are accountable to the ES&H&S Committee Chair.

.x FTE Division Liaison
.x FTE Other EH&S Division staff/subject matter expert(s)

Performance Metrics and Path Forward

The following goals and objectives have been established for the division, based on criteria developed in the Laboratory Self-Assessment Program. As part of the ISM continuous improvement process, the Laboratory's Self-Assessment Program's performance measures are annually reviewed and revised and can be found at the following EH&S Division OAA Web page: http://www.lbl.gov/ehs/oaa/06assess_criteria/DivFY04Criteria_final.doc

- Injury and illness targets
- ES&H training targets
- Waste management targets
- Management system enhancement targets
- Self-assessment inspection targets

Signatures:

Submitted By: _____ _____

Division Director Date

EH&S Resource Commitment: _____ _____

Howard Hatayama Date
Acting EH&S Division Director

Accepted: _____ _____

Steven Chu Date
Berkeley Lab Director

Memorandum of Understanding: Sample Template

Home Division's Matrixed Employees Safety Within Host Divisions

Purpose:

This Memorandum of Understanding (MOU) is to formalize the safety (ES&H) roles and responsibilities of supervisors who oversee matrixed employees supplied by the _____ (Home Division) in support of the _____ (Host Division). This agreement will address the following safety-related activities:

JHQ Completion and Annual Review
Safety Training
On-the-Job Training
Inspection of Workspace
Hazard Correction – Administrative
Hazard Control - Engineering
Ergonomic Evaluations
Ergonomic Accessories
Personal Protective Equipment (PPE)
Accident (SAAR) Investigations

Safety Responsibilities of Home and Host Divisions: (please check [**X**] each box)

Safety Responsibility	Home Division Supervisor	Host Division Supervisor
JHQ Completion and Review	**X** – Start and Annually	
Safety Training	**X** – JHQ Identified Class	
On-the-Job/Specialized Training		**X** – Offer as Class/OJT
Inspection of Workspace		**X** – Part of Division S/A
Hazard Correction – Administrative		**X** – In Assigned Space
Hazard Control - Engineering		**X** – In Assigned Space
Ergonomic Evaluations	**X** – Schedule & Perform	
Ergonomic Accessories		**X** – Provide in Space
Personal Protective Equipment (PPE)		**X** – Issue to Employee
Accident (SAAR) Investigations	**X** – Conduct and Submit	

Signatures:

_____ _____ _____ _____

Host Division Supervisor Date Host Division Manager Date

_____ _____ _____ _____

Home Division Supervisor Date Home Division Manager Date

Appendix I

Berkeley Lab Telecommuting Agreement and Authorization Form

ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY (LBNL)

AGREEMENT & AUTHORIZATION FOR TELECOMMUTING

The Employee named below is hereby authorized to perform work for LBNL at the residence or off-site office located at

_____, _____, _____, _____.
(Address) (City) (State) (Zip)

in accordance with the terms and conditions stated herein. Employee understands and agrees that authorization to perform LBNL job duties away from the LBNL premises is a privilege, and can only be granted in areas were such duties are compatible with LBNL operations and to employees deemed eligible for off-site work assignments in LBNL's sole discretion.

EMPLOYEE NAME: _____ **LBNL Extension:** _____ **MS:** _____

DEPARTMENT/DIVISION: _____ **Employee No.:**_____

AUTHORIZED DUTIES/ASSIGNMENTS:

_____
_____
_____

AUTHORIZED DAYS TO TELECOMMUTE: _____

NOTE: Any hours involving premium overtime must be specifically approved by the Supervisor

Employee further understands and agrees:

(1) that this Agreement does not create a right to perform job duties at any location other than the LBNL site;
(2) that this Agreement is not an entitlement or a contract of employment and may not be construed as such;
(3) that this Agreement may be terminated without cause by either party upon ten business day's prior written notice;
(4) that LBNL information and equipment maintained at Employee's premises will be protected from unauthorized or accidental access, use, modification, destruction, or disclosure;
(5) that Employee's personal vehicle will **not** be used for LBNL business unless specifically authorized below;
(6) that Employee's off-site work space will be maintained by Employee in a safe condition, free from hazards to persons and Equipment; if computer equipment (PC, MAC, and/or Laptop) will be used as part of the telecommuting function, the following activities must be completed and documented using the attached form and returning a copy to the supervisor and EH&S Safety Engineering Group:

   a. Completing the Ergonomics Awareness for Computer Users (EHS 60) training by viewing the "ErgoKnowledge" CD.
   b. Conducting an ergonomic self-assessment of the immediate telecommuting work area using the attached evaluation form.
   c. Installing the necessary ergonomic accessories identified in the self-assessment to assure the telecommuting work area provides controls against ergonomic risks.

(7) that any Equipment provided to Employee by LBNL shall remain the property of LBNL, and that all such LBNL Equipment will be returned to LBNL for inspection, repair, replacement, or repossession upon five (5) business day's prior written notice; and
(8) that Employee will report any injury incurred while performing work for LBNL at Employee's residence or off-site office to LBNL Risk Management (510) 486-5212 or 486- 5213. Any accident must be brought to the immediate attention of Supervisor;
(9) that Telecommuting is not a substitute for child or elder care and Employee will manage dependent care and personal responsibilities in a manner that allows job responsibilities to be successfully met;
(10) that Employee agrees to be accessible (e.g., by e-mail, telephone) during designated work hours and will meet with Supervisor and attend LBNL meetings upon request of the Supervisor;

(11) that other than duties and obligations expressed in this agreement, all duties, obligations, responsibilities, and conditions of employment with LBNL remain unchanged and all LBNL/University rules and regulations pertaining to employment, employee conduct, and performance of duties and health and safety apply to this agreement.

(12) Employee remains liable for injuries to third parties and/or members of Employee's family at the Employee's residence. Employee agrees to defend, indemnify, and hold harmless LBNL, its employees and agents, and The Regents of the University of California, and the United States Department of Energy from and against any and all claims, demands, or liability (including any related costs, losses, expenses, and attorney's fees) resulting from or arising in connection with any injury to persons (including death) or damage to property, caused directly or indirectly, by the work performed by the Employee or by Employee willful misconduct or negligent acts or omissions in the performance of duties and obligations under this Agreement, except where such claims, demands, or liability arise solely form the gross negligence or willful misconduct of LBNL.

USE OF LBNL EQUIPMENT: If LBNL Equipment is to be used by the above Employee away from the LBNL premises, the following MUST be completed:

Description of Equipment	Quantity	Serial No.	Property No.	Est. Return Date

Description of Ergonomic Accessories	Vendor Name	Date Ordered	Date Installed

Ergonomic Accessories Approved By: _____

(Signature of Supervisor)

_____

(Signature of ESH Coordinator)

USE OF EMPLOYEE'S PERSONAL VEHICLE: The Employee is authorized to use the Employee's personal vehicle for the following LBNL purpose(s) **only:**

_____

_____

_____

_____

(Signature of Supervisor)

APPROVAL: I hereby approve performance of the job duties/assignments stated herein by the Employee named above and at the above specified location. If LBNL Equipment is to be used by the Employee, I hereby approve of removal of the above Equipment from the LBNL premises, and of the Employee's storage and usage of such Equipment at the above stated location. **(Attach copy of Equipment Movement Record).**

_____ _____

(Signature of Supervisor) (Date)

_____ _____

(Signature of Division Director/Dept. Head) (Date)

I hereby affirm by my signature that I have read this Telecommuting Agreement, understand its subject matter and agree to all of the above terms and conditions.

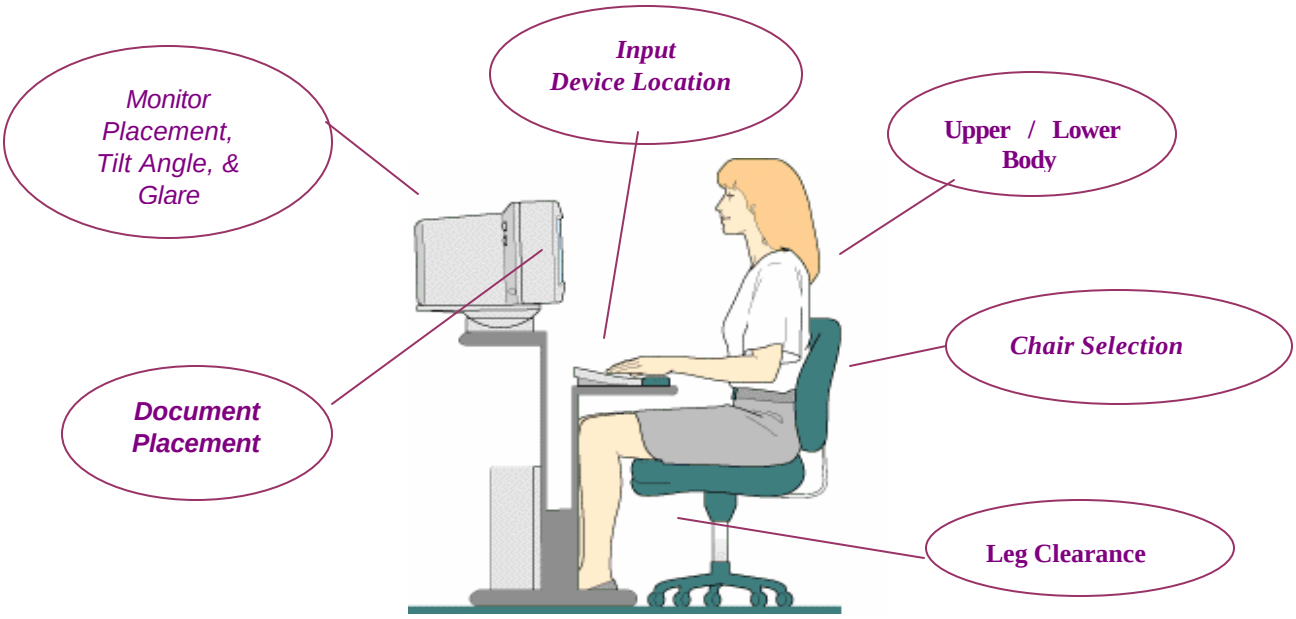
_____ _____

(Signature of Employee) (Date)

Lawrence Berkeley National Laboratory
Environmental Health and Safety Division – Safety Group

Office Ergonomics for the Telecommuter –

Setting up an office at home or another convenient off-site location are common occurrences in today's workplace. If your computer workstation is arranged in a way that work is performed in awkward postures, coupled with extended reaching, repetitive motion and/or excessive and sustained forceful effort, musculoskeletal discomfort, fatigue and injuries may result. Just at in your Berkeley Lab offices, there are ways you can arrange your "at-home" or telecommuting workstations in a way to minimize the risk of musculoskeletal disorders. The computer workstation components identified below are key areas that need to be addressed once you have established your telecommuting work area:



The following ergonomic guidance and safety tips are offered:

- Arrange your equipment so that you can work in a natural and relaxed posture.
- Place items that you use frequently (e.g., phone, document holder, mouse/trackball, keyboard, calculator, etc., within easy reach. Secure cords/cables to avoid creating trip hazards.
- Learn the adjustability features of your ergonomic chair and articulating keyboard tray/arm.
- Adjust your keyboard, mouse, monitor to the proper height by raising/lowering the keyboard tray, table (if adjustable) and chair.
- To create work surface space on your desk, place your computer base (CPU) on the floor.
- Position your monitor perpendicular to windows and/or major light sources to eliminate glare.
- Acquire task lighting if your work area does not provide adequate illumination.
- If you wear prescription lenses, consider obtaining a pair of computer glasses.
- If needed, acquire ergonomic accessories through your supervisor to help further enhance adjustability and "fit" of your workstation.
- If you utilize the phone a significant portion of the workday, consider using a hands-free phone headset unit to minimize supporting the handset with your neck and shoulders.
- Vary your work tasks throughout the day to allow the muscles to adjust and recover from prolonged stationary positions or repetitive movements.
- Obtain a copy of the *ErgoKnowledge* software CD from EH&S Training and view the program for additional ergonomic information and workstation set-up guidelines.

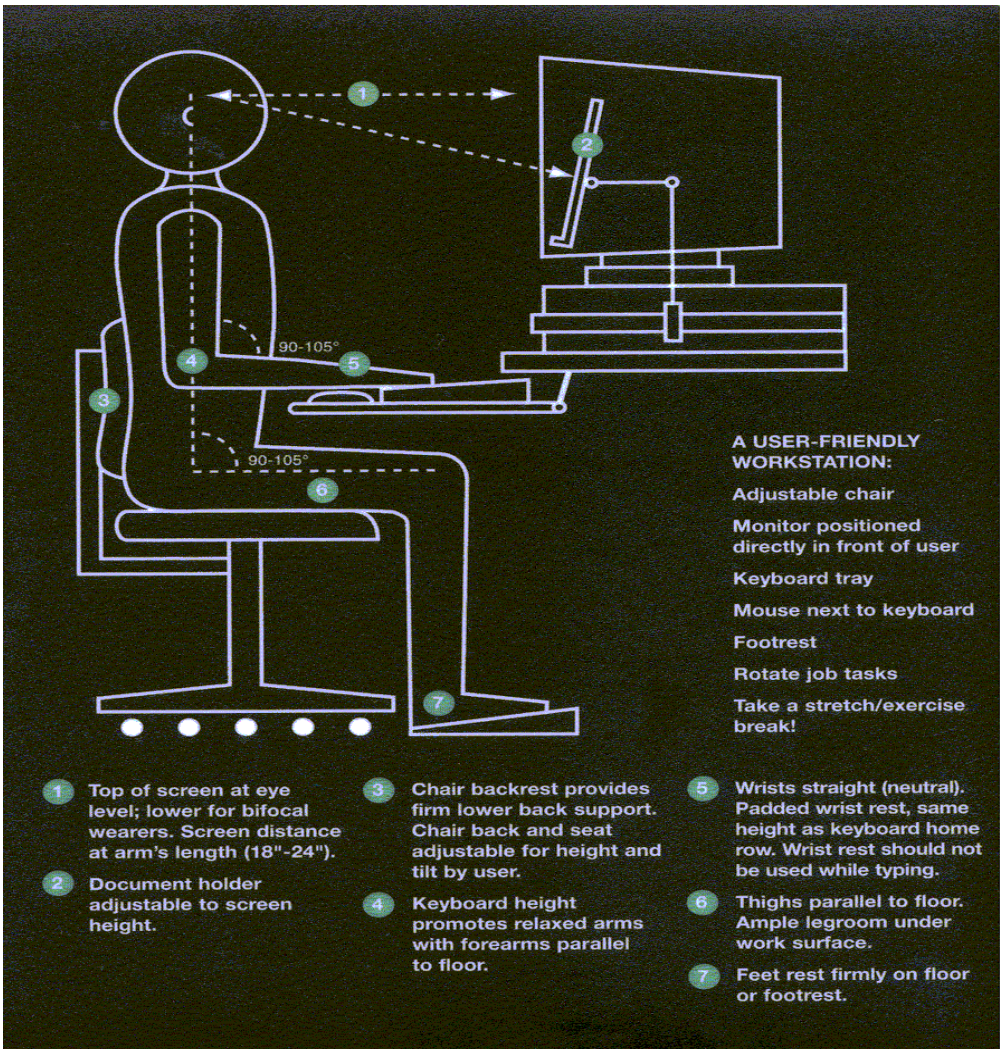
If you are experiencing any discomfort, notify your supervisor and visit Health Services in Building 26 (x6266). Work with your supervisor and ES&H Coordinator to seek technical assistance for an ergonomic evaluation by EH&S Division personnel. For further information, visit the LBNL EH&S Division Ergonomics Website at: *http://www.lbl.gov/ehs/ergo/* or contact Jeffrey Chung at the EH&S Safety Group (x5818 or *jychung@lbl.gov*) .

Lawrence Berkeley National Laboratory
Environmental Health and Safety Division – Safety Group

Telecommuting and Ergonomics –
(by Jeffrey Chung – x5818)

Per LBNL policy, RPM 2.23(D)(5), Telecommuting is a viable work option under certain circumstances. If you have an approved Telecommuting arrangement with the Laboratory and you will be using computer equipment (PC, Mac, Laptop, etc.) as part of the Telecommuting function, the following criteria are to be met:

- Before initiating the Telecommuting agreement, the employee and supervisor are to jointly complete a brief training module on developing successful Telecommu ting arrangements. The module consists of a 15-minute video and accompanying workbook (available from Human Resources0.
- Obtain a copy of the ErgoKnowledge CD software program from EH&S Training and view it to satisfy Ergonomic Awareness training (EHS 060).
- Conduct an ergonomic self-assessment of your immediate Telecommuting computer work area and assure proper configuration is achieved (see diagram below).
- Work with your supervisor and EH&S to assure the necessary ergonomic accessories are installed to provide adequate controls against ergonomic risks exposures.
- If you are experiencing any work-related discomfort while performing computing tasks at your Telecommuting location, notify your supervisor and contact LBNL Health Services at (510) 486-6266.



Appendix J

Integration of ISMS Principles to Division Self-Assessment

(Self-Assessment Performance Criteria)

PY 2004 Self-Assessment Performance Criteria (Final)

EXPECTATION	VALIDATION	RATING
DEFINE WORK		
E1. Resources are effectively allocated to balance ES&H, programmatic, and operational considerations.	V1. Are resources allocated to address ES&H considerations?	satisfactory - green partial - yellow marginal – red
E2. Line management regularly communicates ES&H policy, procedures, and lessons learned to all staff. Division staff has clear lines of communication to convey ES&H issues to Lab and Division management, including evidence of clear policy for all staff to communicate safety concerns. Examples of appropriate communication/policy include: • Annual all-hands division meeting • Active Division Safety Committee • Group safety meetings • Division ES&H web site • Roles and responsibilities detailed in ISM plan • Division-wide emails	V2. Is ES&H discussed in on-going meetings between line management and staff? Is process systematic?	satisfactory - green partial - yellow marginal - red
IDENTIFY HAZARDS		
E3. Workspaces are inspected and evaluated on a regular basis.	V3. % Division workspace inspected	>90% - green >70% - <90% - yellow <70% - red
E4. Divisions have a process to identify, analyze, and categorize hazards associated with work. Examples of hazard inventory include: • HEAR database • project safety review • workspace safety review	V4. For all Division projects, programs, and operations, have hazards been identified and inventoried? Does inventory include both new work and modification of existing work?	satisfactory - green partial - yellow marginal - red

EXPECTATION	VALIDATION	RATING
CONTROL HAZARDS		
E5. Divisions ensure engineering and other safety controls are in place and maintained. Examples of engineering controls include, but are not limited to: • guards • fume hoods • interlocks • personal protective equipment • gas monitors	V5. Are engineering controls monitored as part of division self-assessment program? Are controls certified/checked, calibrated, and/or serviced within the required schedule?	satisfactory - green partial - yellow marginal - red
E6. Divisions ensure administrative controls are in place and maintained. Examples of administrative controls for self-authorized work include: • work procedures • project safety reviews • assurance letters	V6. Are hazards controlled for all Division projects? Are administrative controls reviewed annually and when work is modified? This includes work under formal authorizations (eg. AHDs, RWAs) and self-authorized work (i.e. Division approval only).	satisfactory - green partial - yellow marginal - red
E7. Divisions ensure that ergonomic issues are effectively addressed for work processes and staff workstations.	V7. Does the Division have an active ergonomic program for its employees, including ergonomic training (i.e. EHS060, EHS052, EHS062), evaluations, and controls for work processes and workstations? Are evaluation recommendations implemented?	satisfactory - green partial - yellow marginal - red
E8. Divisions ensure that peroxide forming chemicals are effectively controlled. Examples of controls include: • Locations and owners of peroxide forming chemicals are identified • Peroxide forming chemicals are labeled in accordance with the Chemical Hygiene and Safety Plan • Peroxide forming chemicals are tested in accordance with the Chemical Hygiene and Safety Plan	V8. Does the Division have a program to control peroxide forming chemicals?	satisfactory - green partial - yellow marginal - red

EXPECTATION	VALIDATION	RATING
PERFORM WORK		
E9. Work is performed within the ES&H conditions and requirements specified by Lab policies and procedures.	V9a. Work within authorization: % SAA compliance (including MWSAAs, RWCAs)	*regulatory driven* >90% - green >75% - <90% - yellow <75% - red
	% Authorization compliance (i.e. RWAs, RWPs, XRSs, AHDs)	*regulatory driven* >90% - green >75% - <90% - yellow <75% - red
	% compliance QA waste samples	*regulatory driven* >95% or only 1 failure - green >92% - <95% - yellow <92% - red
	# Waste Management issued NCARs	*regulatory driven* 0 - green type 1* - yellow type 2 @ - red
	V9b. Injuries and Accidents: Is TRC rate under 2.62 or evidence of divisional improvement?	*contract driven* TRC >25% below 2.62 or 20% improvement or 1 case/yr - green TRC <25% below/above 2.62 or 10% improvement or 2 cases/yr - yellow TRC >25% above 2.62 - red
E10. Staff is proficient in performing work safely.	V10a. % completion of JHQs or equivalent system.	>90% - green >80% - <90% - yellow <80% - red
	V10b.Based on JHQs or training profiles, % completion rate for required courses.	>90% - green >80% - <90% - yellow <80% - red

EXPECTATION	VALIDATION	RATING
PERFORM WORK (CONTINUED)		
E11. Divisions review at least one research or operations process. Reviews are documented and , if possible, waste reduction strategies implemented.	V11. 1) Divisions demonstrate progress in minimization opportunities identified in PY04 self-assessment. 2) Divisions review at least one research or operations process. Reviews are documented and , if possible, waste reduction strategies implemented. Divisions include waste minimization in division project review protocols. 3) Divisions that generate no regulated waste pursue minimization opportunities for other wastes (paper, batteries, toner, etc.).	satisfactory - green partial - yellow marginal - red

EXPECTATION	VALIDATION	RATING
FEEDBACK AND IMPROVEMENT		
E12. Managers and staff are regularly involved in ES&H feedback and improvement activities.	V12. Do line management (including division directors, principal investigators, and senior/mid managers) and staff participate in feedback and improvement activities (i.e. walkthroughs, programmatic safety review, and other ES&H activities)?	satisfactory - green partial - yellow marginal - red
E13. ES&H deficiencies identified from workspace inspections, self-assessment activities, and external appraisals are corrected in a timely manner. A downward trend of Level 1 and 2 LCATS repeat deficiencies is established.	V13. % completion rate of LCATS corrective actions (Levels 1, 2, and 3) implemented in a timely manner.	>90% - green >80% - <90% - yellow <80% - red
E14. ES&H programmatic deficiencies identified from Management of ES&H (MESH) Reviews, Integrated Functional Appraisals (IFAs), and previous Division Self-Assessments are corrected in a timely manner.	V14. % completion rate of programmatic corrective actions identified during MESH Reviews, IFAs, and previous Division Self-Assessment implemented in a timely manner.	>90% - green >80% - <90% - yellow <80% - red
E15. Division performs thorough review of all staff injuries and accidents, including analysis of conditions that led to injury and implementation of corrective actions.	V15. Has Division ensured that accident causes and corrective actions for first aid and recordable injuries are effectively identified on SAARs? Are corrective actions implemented?	satisfactory - green partial - yellow marginal - red

* - "Type 1" NCAR is assigned if the waste is certified to be free of radioactivity and when tested, is shown to be radioactive by DOE standards. Waste would be evaluated against ANSI N13.12, which is based on the relative toxicity of isotope. A Type 1 NCAR is assigned if the item in question has volumetric radioactive contamination of solids or liquids equal to or less than:

3pCi/g (Ex.226Ra, 230Th, 210Po, 210Pb, 237Np, 239Pu)
30pCi/g (Ex. 22Na, 60Co, 137Cs)
300pCi/g (Ex. 131I, 241Pu)
3000pCi/g (Ex. 3H, 14C, 32P, 35S, 125I, 51Cr).

@ - "Type 2" NCAR is assigned if there is a regulatory violation subjecting the Lab to fines and penalties (waste in SAA >1 year), a safety hazard, or the presence of radioactivity where the waste is certified to be free of radioactivity and exceeds limits of ANSI N13.12.

Appendix K

Memorandum of Understanding

"Interface Policy Between EH&S & Facilities: Project Support"

Appendix L

Safety Review Committee (SRC) Charter

http://www.lbl.gov/ehs/src/src.htm

Function

The Safety Review Committee (SRC) performs research for, and makes recommendations to, the Laboratory Director on the development and implementation of Environment, Safety & Health (ES&H) policy, guidelines, codes, and regulatory interpretation. It conducts reviews of special safety problems and provides recommendations for possible solutions if requested to do so by the Laboratory Director. The SRC also provides advice and counsel to the Laboratory Deputy for Operations by reviewing appeals from the Laboratory divisions when any division and the Environment, Health & Safety (EH&S) Division do not agree on the interpretation or application of criteria, rules, or procedures. Such advice and counsel may include options for a resolution.

In addition, the SRC chair, in cooperation with the Office of Assessment & Assurance (OAA), is responsible for scheduling and conducting the portion of institutional self-assessment known as Management of Environment, Safety & Health (MESH) reviews. These reviews are designed to ensure that management systems consistent with Integrated Safety Management (ISM) are in place in all Laboratory divisions and that these systems are leading to effective implementation of the Laboratory's ES&H program. MESH reviews are triennial by division and are conducted by an SRC subcommittee. All members of the SRC are expected to serve on MESH subcommittees.

To properly execute its responsibilities under this charter, the SRC Chair may appoint expert subcommittees to address specific health and safety matters. Such subcommittees may become long standing expert subcommittees, or they may be of short duration, depending on the technical support requirement.

Membership/Composition

The Laboratory Director appoints the SRC Chair. SRC membership includes a representative from every Laboratory division, as well as the Facilities Department and the Administrative Services Department (ASD), who will also represent the Directorate:

- HR
- CFO
- Office of Work Force Diversity
- Office for Planning and Communications
- Laboratory Counsel
- Office spaces of the Laboratory Director and Deputy Directors

Division directors and department heads nominate members of their organizations to the Chair, and the Director formally appoints them to the SRC. The EH&S Division Director or Division Deputy will represent the EH&S Division. Additionally, the chairs of active subcommittees will serve as SRC members.

Appointments are normally for three-year terms that can be renewed once. The SRC is designed to be a committee of peers involved in the research and development activities of the Laboratory. In

research-oriented divisions, members should be drawn from the scientific staff; participation by active experimental scientists is important to the functioning of the SRC.

In addition to SRC members, the Chair may invite (based on SRC agenda) the following advisors:

- Chair of Human Subjects Committee
- Chair of Animal Welfare and Research Committee
- Chair of Radiation Safety Committee
- Chair of Biosafety Committee
- Laboratory Environmental Counsel

Meeting Schedule

Meetings will be held as necessary, but at least once every two months. When members are unable to attend, substitutes may be designated to attend specific meetings. If a member does not attend at least four meetings throughout the calendar year, the SRC Chair will consult the member's division director or department head to ask that a replacement be nominated. The SRC chair will designate a recording secretary. Minutes shall be recorded for every meeting; and once a year, the committee will submit a written and oral report of activities to the Director.

Provision for Amendment

The Chair shall submit to the Laboratory Director any recommendations for the amendment of this charter.

Appendix M

Radiation Safety Committee (RSC) Charter

http://www.lbl.gov/ehs/ism/App_M.html

Radiation Safety Committee (RSC) Charter

Purpose

The Berkeley Lab Radiation Safety Committee (RSC) is appointed by, and reports to, the Laboratory Director and is responsible for advising LBNL Management on all matters related to occupational and environmental radiation safety. The Radiation Safety Committee reviews and recommends approval of radiation safety policies and guides the Environment, Health and Safety Division and radiation user divisions in carrying out these programs. The scope of its actions will generally be in issues of broad institutional concern and impact, or areas of potential high consequence either in terms of safety or institutional needs.

The RSC shall provide a forum to ensure that important radiation safety issues receive appropriate, balanced, and expert review before being acted upon.

Membership

The RSC shall be composed of not more than ten nor less than five members exclusive of ex-officio members. Members shall be appointed by the Laboratory Director for three-year renewable terms on the basis of knowledge of the principles and practices of the control of radiation hazards and on experience and management in the use of radioisotopes and/or radiation producing machines. The membership shall reflect the diversity of scientific disciplines using radiation at LBNL. The LBNL Radiological Control Manager (RCM) shall serve as a full member and acts as the liaison with other Berkeley Lab programs. In addition, the LBNL Safety Review Committee will provide at least one full or ex-officio member who will provide liaison to that body and ensure integration with larger institutional safety issues.

Responsibilities

I. Meetings

The RSC shall meet at least once each calendar quarter. Additional meetings may be called by the RSC Chair to review and approve higher hazard radiation uses, review and act on radiation incidents, and/or consider matters referred by the RCM or members of the RSC.

A quorum, consisting of a simple majority of the voting membership, shall be present at all meetings and will include the RCM or designee. Minutes of the meetings shall be kept by the RCM or designee. Copies of the minutes shall be sent to members of the RSC and applicable Berkeley Lab staff. The Radiation Protection Program shall maintain a file of the RSC meeting minutes.

II. Policy Review

The RSC shall review Radiation Protection Program policies and recommend approval or modification of them to Laboratory management. The scope of policy review shall include the following program areas:

1 Authorizations or permits to acquire and use radioisotopes (sealed and unsealed), radiation-producing machines and to work in radiation controlled areas.
2 Storage, transportation, use and disposal of radioactive materials.
3 Radioactive material waste handling and processing.
4 Environmental release of radioactive effluents and direct environmental radiation exposure.
5 Internal and external dosimetry program.
6 Emergency response to accidents involving radioactive material or radiation-producing machines, and investigation of such events.
7 ALARA program and goals.
8 Facility radiation protection design review
9 Radiation safety training

III. Authorization and Permit Review

Radiation Work Authorizations (RWAs), Radiation Work Permits (RWPs), and Sealed Source Authorizations (SSAs) shall be reviewed and approved by the RSC as listed below. Amendments that increase classification of a RWA or authorize new Class III work will also receive RSC review. Questions and disagreements concerning review and approval of an RWA/RWP/SSA shall be resolved by the RSC. RSC members whose own authorizations are under review will abstain from voting.

The RSC, in conjunction with the RCM may at any time prohibit any controlled radiation activities which it deems to be unduly hazardous, or contrary to regulations or good practice. In such cases, the RSC shall inform the appropriate Division Directors.

Approval of radiation use:

Class I - reviewed and approved by the Radiological Control Manager for the RSC.

Class II - reviewed and approved by the Radiological Control Manager and the RSC Chair or designated Committee member.

Class III - reviewed and approved by the Radiological Control Manager and a majority of the RSC members. The RSC Chair or designated Committee member will sign for the Committee.

IV. Radiation Safety Performance Review

The RSC provides oversight to the radiation safety compliance inspections carried out by the Radiation Protection Program. The RCM or other appropriate EH&S staff will report periodically to the RSC on radiation safety performance by LBNL users. Also, on a case-by-case basis the RCM may bring individual compliance issues before the RSC. If performance of radiation users or EH&S is found to be unsatisfactory, the RSC may recommend appropriate remedies

to the Laboratory Director, EH&S, or appropriate Division Director.

The RSC shall also provide oversight to the Radiation Protection Program (RPP). Periodically the RCM will provide reports to the committee on the EH&S Division's performance in discharging its policy and procedural radiation safety responsibilities. The RSC may independently evaluate RPP implementation procedures, obtain feedback from radiation users regarding RPP functions, and make recommendations to the Laboratory Director, EH&S Director, or the RCM.

The RSC shall keep good records of all its activities including but not limited to regular or special meetings, investigation reports, and programmatic reviews. Throughout the year meeting minutes and other reports shall be transmitted to the Laboratory Director in a timely fashion. The Committee shall meet with the Laboratory Director at least annually to discuss issues and review the Committee' s activities. An annual activities report shall be prepared for the Director.
The highlights of this activities report may be presented at a Division Director's meeting.

V. Facility Design Review

As deemed necessary by the RCM, the RSC shall review and recommend for approval radiological design reviews conducted by members of the Radiation Protection Program.

VI. ALARA

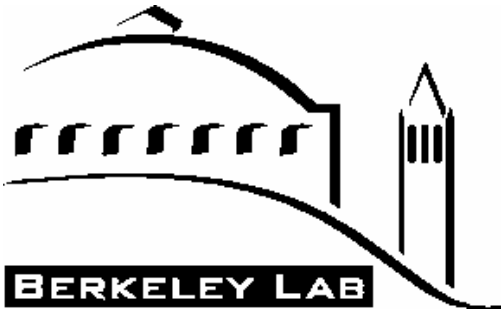
The RSC shall review and approve institutional ALARA goals for occupational and public exposure to radiation. Periodically, the RCM or appropriate EH&S staff shall provide reports documenting performance, trends, and explanations for actual dose relative to these targets. At its discretion, or at the request of the RCM the RSC may perform independent ALARA reviews of selected user activities. In such cases EH&S staff shall provide appropriate technical support.

VII. Investigations

The RSC may investigate radiological occurrences or other conditions affecting regulatory compliance or radiation protection. These investigations may be requested by the RCM, EHS Division Director or the Laboratory Director. The RSC Chair will determine the Committee's involvement in the investigation. The extent of the RSC's involvement will be determined by the nature of the situation or occurrence and its impact on the Radiation Protection Program.
Investigations will be coordinated with the Environmental Counsel and the Price Anderson Amendments Act Coordinator as appropriate. Affected divisions may form a committee to investigate an incident pursuant to Section 5.1.14 of PUB-3000. At least one member of the RSC will be on the committee. A copy of the Committee Report will be sent to the RSC.

Appendix N

(Balanced Scorecard criteria)



FY 2004

Environment, Safety, and Health

ISM Performance Assessment Model

Lawrence Berkeley National Laboratory

University of California Laboratory Management Office

Department of Energy - Berkeley Site Office

February 20, 2004

Background Information

Contract No.:	DE-AC03-76SF00098
Points of Contact:	Howard Hatayama LBNL ES&H, Acting Division Director (510) 486-6012 Hattie Carwell BSO ES&H Operations Manager (510) 486-4296 Howard Hatayama UC Lab Management, Director ES&H and ERWM (510) 987-0801
Effective Approval Date:	February 20, 2004

Introduction

The Environment, Safety, And Health (ES&H) Functional Managers from the Lawrence Berkeley National Laboratory (LBNL), the Department of Energy (DOE) Berkeley Site Office, and the University of California Laboratory Management Office have agreed to assess Performance Measure 1.1 as prescribed in Appendix F.

Performance Measure 2.1 will be assessed through the ES&H ISM Balanced Scorecard. This Balanced Scorecard has been mutually adopted by all parties and establishes the sub-measures for Criterion 2.0.

Performance Assessment Components

The following Balanced Scorecard model shall be used for the evaluation of Performance Measure 2.1 only.

ISM Balanced Scorecard

Balanced Scorecard	ISM Functions	Performance Expectations	BSC Measurements	Weighting Factor	Goals/Ratings
Customer	Scope of Work and Planning	Missions are effectively translated into work. Responsibility for safety by managers and staff is effectively communicated.	*Self-Assessment ISM Criterion E2*, There is ongoing and systematic ES&H communication between management and staff.	1X	Strong ES&H communication in organization.
	Feedback and Improvement		*Self-Assessment ISM Criterion E11*, Managers and staff are regularly involved in ES&H feedback and improvements.	1X	Customers actively engaged in ES&H activities.
		Internal customers are satisfied with EH&S services and programs that support a safe workplace and protection to the environment and public.	Annual Operations Scorecard ratings for EH&S performance in quality, timeliness, cost, communication, innovation and support of missions.	1X	Customer feedback positive in all areas.
Financial	Scope of Work and Planning	There is cost effective delivery of ES&H services and programs. Value is added while controlling costs.	*Self-Assessment ISM Criterion E1*, Resources are effectively allocated to address ES&H considerations.	1X	Effective allocation of ES&H resources.
			Evaluate ES&H cost effectiveness and establish next year's performance goals as applicable. **(see note 1)**	1X	Evaluate ES&H cost effectiveness and establish FY05 performance goals as applicable. **(see note 1)**

Operations (Internal Business Process)	Hazard Identification and Analysis	There is an effective process to identify, analyze and categorize LBNL hazards.	*Self-Assessment ISM Criterion E4*, Divisions have a process to identify, analyze, and categorized hazards associated with work.	1X	Hazard ID and analysis system in place & effective.
	Implementation of Hazard Controls	Administrative and engineering controls to prevent/mitigate hazards are effectively tailored to the work being performed. Applicable safety standards, requirements, and safety envelopes are established.	*Self-Assessment ISM Criterion E5*, Engineering and other safety controls are in place and maintained; *Criterion E6*, Administrative controls are in place and maintained.	1X	Controls checked and effective.
	Perform Work	LBNL operations and activities will minimize accidents and injuries.	Progress shall be measured towards reducing the TRC and DART rates to the 25th percentile of the 2001 SIC 873 large establishment rates by FY2005. **(see note 1)**	5X	% Progress in meeting the 25th percentile of the 2001 SIC 873 rates. **(see note 1)**
People	Feedback and Improvement	Employee development promotes staff competency and professional certifications.	*Self-Assessment ISM Criterion E9*, Staff is proficient in performing work safely.	1X	% Completion of required training.
			Benchmarking shall be conducted to gather information on staff professional certification. Future performance goals shall be established. **(see note 1)**	1X	Complete benchmarking and establish future performance goals. **(see note 1)**
Ethics Governance Compliance	Perform Work	External reviews by regulatory agencies show that LBNL is in compliance with regulatory requirements.	Number of major non-compliance issues is below internal control number.	4X	Incidents of noncompliance under control number.
			Overall Percent Score	total weighted numerical value / 54 (total possible score)	

Notes:

1. Performance ratings of BSC measures for ES&H cost effectiveness (financial), TRC/DART rates (operations), and professional certifications (people) are described in detail below. The measures and ratings were jointly agreed upon by LBNL and BSO on February 13, 2004 as follows:

   BSC "People" Measure: Employee development promotes staff competency and professional certification.

   Lab Process: Benchmarking will be conducted to gather information on professional certification, licenses, and degrees achieved for staff at other DOE laboratories and/or comparable industries. As part of the benchmarking effort, LBNL staff who have certifications, licenses and professional degrees or are in career positions where such certification would be beneficial will be identified. The benchmarking results will be the basis for future performance goals.

   Performance Rating:

   Satisfactory (green): Benchmarking will be developed and conducted to gather information on staff certification, licenses, and degrees at other DOE laboratories and/or comparable industries. As part of the benchmarking effort, LBNL staff who have certifications or are in career positions where certification would be beneficial will be identified. Future performance goals are established as a result of the benchmarking.

   Partial (yellow): Benchmarking has been completed. Future performance goals have not been established.

   Marginal (red): The benchmarking has not completed.

   BSC "Financial" Measure: There is cost effective delivery of ES&H services and programs. Value is added while controlling costs.

   Lab Process: As part of a multi-year effort, evaluate the cost effectiveness of LBNL ES&H services and programs. Establish performance goals for improved cost effectiveness as applicable.

   Performance Rating:

   Satisfactory (green): Evaluate ES&H cost effectiveness. Establish FY 2005 performance goals based on the results of the ES&H cost effectiveness evaluation.

   Partial (yellow): Partial progress has been made in evaluating the ES&H cost effectiveness.

   Marginal (red): No or minimal progress has been made in evaluating the ES&H cost effectiveness.

BSC "Operations - Accident Prevention" Measure: LBNL operations and activities will minimize accidents and injuries.

Lab Process: The Lab will reduce its TRC and DART rates to the 25th percentile of the 2001 SIC 873 large establishment rate by fiscal year 2005. For fiscal year 2004, LBNL shall demonstrate significant progress towards meeting the 25th percentile goal. The corresponding TRC/DART rates are the following:

Performance Rating:

Ratings	TRC	DART
Satisfactory (green) 3pts	30% reduction or greater (<= 1.725)	<= 0.77
Partial (yellow) 2pts	20% to 30% reduction (>1.72 to <= 1.95)	>0.77 to <= 0.99
Marginal (red) 1pt	10% to 20% reduction (>1.95 to 2.2)	>0.99

Less than a 10% reduction in TRC is below marginal and receives 0 pts.in the scoring.

2. BSC scoring is based on a red/yellow/green (unsatisfactory/marginal/satisfactory) rating system. Each color-coded rating has a numerical value equal to: green = 3 points; yellow = 2 points; red = 1 point. Each BSC measure has a weighting factor of 1X, 4X, or 5X its numerical score to signify the relative importance of the measure in the Balanced Scorecard. Overall score is the total numerical value of the measurement ratings over the total possible score of 54. The BSC overall percent score is the basis for rating performance for Measure 2.1, ISM System, in the Appendix F contract.

3. BSC measurements shall utilize existing LBNL metrics whenever feasible. Seven of the eleven measures are from Berkeley Lab's FY04 Self-Assessment ISM Performance Criteria. Each ISM criterion is given a percent score based on performance from each of the 16 LBNL divisions or directorates. The ISM percent score is equivalent to the BSC color-coded rating as follows: 90% to 100% = green; 80%-89% = yellow; and less than 79% = red. ISM percent score is provided in the far right column of the "At-a-Glance" table from the Lab's Annual ES&H Self-Assessment Report.

4. Eight of the eleven measures have direct application to DOE's annual validation of ISM. For DOE's purposes, the scores of those measures can be used separately from the total ISM Balanced Scorecard.

5. Incidents of noncompliance are based on the number of reportable occurrences under Group 9 of the Occurrence Reporting and Processing System (ORPS). Less than or equal to two occurrences = green rating; More than two and less than four occurrences = yellow rating; and more than four occurrences = red rating.

Appendix O

Environment, Safety, and Health

Performance Objectives, Criteria, and Measures

(POCMs)

Section C — Performance Objectives, Criteria, and Measures

1 Environment, Safety, and Health

Preamble

The Laboratory's overall goal is to accomplish its scientific mission while striving for an injury-free workplace, protecting the public and the environment, and minimizing waste from its operations.

It is the objective of the LBNL ES&H Program to support the Laboratory mission by delivering quality ES&H counsel and services, and to advance the frontiers of science by providing a competitive and cost effective advantage for scientists throughout the Lab. In order to achieve this objective, the Balanced Scorecard approach will be applied to the ES&H Program to measure selected activities for continuous improvement resulting in the competitive advantage desired. The Balanced Scorecard incorporates measurements in the following categories:

- Customer
- Financial
- Operations
- People
- Ethics Governance Compliance

It is also the intent of LBNL to continue to operate the Laboratory in a manner that builds on the proven concept and practice of Integrated Safety Management (ISM). The concepts of Balanced Scorecard and ISM are complementary. The elements of the Balanced Scorecard are embedded in ISM and results of internal Balanced Scorecard metrics roll up into the five core functions of ISM.

The following Performance Objective, Criteria and Measures evaluate the effectiveness of ISM while addressing the four categories in the Balanced Scorecard.

Performance Period: Unless otherwise specified in the measures, the performance period is October 1, 2003 to September 30, 2004.

Performance Objective
The Laboratory uses ISM, best practices, certification, and validation of ES&H Management Systems to integrate ES&H into Lab work processes at all levels so those missions are accomplished while protecting the worker, the public and the environment.

Criterion 1.0
The Laboratory will assess, develop, and implement best practices and certified/independently validated ES&H management systems based upon industry best practices and international/national standards.

Performance Measure 1.1: Best Practices and Certified/Independently Validated ES&H Management Systems
To meet efficiency and effectiveness standards of its internal business processes, the Laboratory is satisfactorily progressing towards certification, validation, or accreditation (CVA) of its ES&H Management Systems and implementing actions from its best practices studies. (**weight = 40%)**

Performance Gradients

Unsatisfactory	Little or no effort has been demonstrated towards the achievement of the performance measure.
Marginal	Some effort is demonstrated however results fall short of the expectations for the good gradient.
Good	CVA progress and best practices implementation are significant but impediments have occurred that delay the completion of some certified, validated, or accredited ES&H management system milestones and best practices milestone (>75% of milestones completed).
Excellent	CVA progress is on-schedule with few delays in the completion of certified, validated, or accredited ES&H management system milestones and best practice milestones (>85% of milestones completed).
Outstanding	CVA progress is on-schedule with no significant delays in the completion of certified, validated, or accredited ES&H management system milestones and best practice milestones (>95% of milestones completed).

Assumptions

- ES&H management systems have been identified as part of the FY03 Appendix F POCMs. The Voluntary Protection Program (VPP) identified last year has been replaced with the Occupational Health and Safety Assessment Series (OHSAS) 18001 certification.

- Action plans for the identified ES&H management systems, with the exception of OHSAS 18001, have been reviewed and approved as part of the FY03 Appendix F POCMs. The action plan for OHSAS 18001 certification will be reviewed and approved by BSO as soon as feasible but no later than January 15, 2004.

- CVA of ES&H management systems is a multi-year effort. Future events, issues, or circumstances may result in required or recommended changes to the CVA action plans or in the elimination/ addition of candidate ES&H management systems. Any changes to the action plans or list of candidate ES&H management systems must be mutually agreed to by DOE/BSO and LBNL.

- Best Practice assessments of hazard analysis and self-assessment were completed in FY03. Follow-up actions as identified in the best practice improvement plans are to be completed as part of the FY04 Appendix F POCMs. Best practice actions are identified as best practice milestones.

Criterion 2.0

The Laboratory will measure the effectiveness of ISM through its ISM Balanced Scorecard (BSC).

Performance Measure 2.1: ISM System

The Laboratory has an effective Integrated Safety Management (ISM) System that protects Lab employees, the public and the environment while supporting the scientific mission of the Lab. (**weight = 60%**)

Performance Gradients

Performance is rated through the ISM Balanced Scorecard. (The balanced scorecard gradients are in the ES&H ISM Performance Assessment Model agreed to by LBNL and BSO. They are incorporated by reference). Adjectival rating is based on the following percent score:

BSC Overall Percent Score	Performance Gradients
More than 90%	Outstanding
> 80% to < 90%	Excellent
> 70% to < 80%	Good
> 60% to < 70%	Marginal
Less than 60%	Unsatisfactory

Assumptions

- The ISM Balanced Scorecard shall be used to evaluate ISM effectiveness.
- Supplemental information on the quality and effectiveness of the Berkeley Lab's ISM program can be provided through the BSO/LBNL Operational Awareness (OA) Program. Current data gathered to address Appendix F measures from previous performance periods can be used as supplemental information in evaluating specific ISM functions. In particular, the Lab will continue to gather data to monitor worker radiation dose, unplanned radiation exposure, radiation contamination, environmental releases, and overexposure to chemical, biological and physical agents.
- The evaluation of this measure is the DOE validation of the effectiveness of ISM implementation.

Appendix P

Integrated Safeguards and Security Management (ISSM)

http://www.lbl.gov/ehs/security/issm/ISSMfinal.html